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With Which Is Combined

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International Paper Co. Deeply Cuts Its Loss

Deficit of $3,939,269 for 1933 As Compared With $8,757,729 for 1932—Report Points Out That Charge of $1,868,080 Was Made to Profit and Loss by a Subsidiary as a Reserve Against Investment in the Newsprint Bond and Share Co. — Investment in Hydro-Electric Carried at $725,546 as Compared With $22,400,000

The International Paper and Power Company reports that consolidated gross revenue in 1933 was $135,338,295 compared with $129,531,271 in 1932; consolidated net revenue available for interest, depreciation, etc., was $41,820,638 against $37,111,048; and a net loss for the year of $3,939,269 after all charges including depreciation, compared with a net loss of $8,757,728 in 1932. In addition, in the consolidated statement for 1933 there is a charge to profit and loss account in the amount of $1,865,080 made by a subsidiary company for the purpose of establishing on the books of the subsidiary company a reserve against its investment in the capital stock of Newsprint Bond and Share Company which was acquired prior to 1933.

In 1933 a net reduction of $829,443 was effected in total consolidated funded debt. Only $2,206,516 of this debt matures in 1934. The Company has no major item of funded indebtedness maturing until 1937.

Consolidated notes payable at December 31, 1933, amounted to $18,552,261, a reduction of $9,431,986 during the year. Of this total, notes payable of International Paper Company and subsidiaries at the end of 1933 amounted to $16,040,061, a decrease of $2,308,104 in 1933.

Comparative consolidated statements are as follows:

	1933	1932
Gross revenue	$135,338,295	$129,531,271
Net revenue, including other income	41,820,638	37,111,048
Less: Int. and disc. on funded debt, other int., income taxes, sub. divs., and amounts applicable to minority stocks of subsidiaries	36,335,886	36,690,325
Depreciation and depletion	9,424,021	9,178,451
Net loss for the year	3,939,269	8,757,728
Add: Additional reserves	1,865,080	.....
Total reduction in surplus	5,804,349	8,757,728

Gardner-Richardson Co. Suffers Fire Damage

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, April 9, 1934—After a three-hour battle, firemen succeeded in extinguishing a blaze in the paper storage building of the Gardner-Richardson Company in Lockland one night last week. The damage was estimated at $5,000.

For a time the main section of the large plant was threatened but the sprinkling system in the building and six streams of water played through hatches on the roof by the firemen, confined the flames to the inside. It was a long and stubborn fight that the firemen necessarily made to conquer the blaze.

Dense clouds of smoke issued from the eight hatches of the building but no flames or sparks broke through. One end of the storage building adjoins the box wood department, which in turn, connects with the main plant, but the wall was of sufficient thickness to stand the siege of the fire.

The blaze is believed to have originated from spontaneous combustion.

The building was five stories in height, approximately 200 feet wide and 400 feet long. It was constructed especially for the storage of scrap paper used in the manufacture of paper products. The walls are of brick and the roof of tar paper. There are approximately 20 windows on each side, but the flames did not break through them.

The fire was discovered by Richard Butler, night watchman at 7 P.M. He notified Chief Fred Sanders of the plant who in turn sounded the alarm for the Lockland department.

The eight hatches in the roof were especially constructed for the purpose of fighting fires and streams of water were directed upon the stacks of paper stored almost to the roof.

Hammermill Paper Co. Makes Good Report

The report of the Hammermill Paper Company and subsidiaries for year ended December 31, 1933, certified by independent auditors, shows consolidated net profit of $609,766 after depreciation, depletion and federal taxes, equivalent after dividend requirements on 6 per cent preferred stock, to $1.94 a share on 180,000 shares (par $10) of common stock. This compares with $11,352, or 25 cents a share on 45,294 shares of 6 per cent preferred stock in 1932.

Appoints Code Authorities

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 9, 1934—National Recovery Administrator Hugh S. Johnson has announced the appointment of E. S. Mead as administration member of the code authority for the Cylindrical Liquid Tight Paper Container Industry, and of George Featherstone to serve in the same capacity on the code authority for the Food Dish and Pulp and Paper Plate Industry.

Demand for Paper Improves Steadily in Chicago

Fine Paper Market Exhibits Stronger Undertone Than of Late—Greater Request for Various Grades of Sulphite Bond Experienced—Kraft Wrapping Paper Quotations Firmer—Outlook for Ground Wood Papers More Encouraging

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 9, 1934—Paper buyers have evidently been waiting for the first month of real Spring to go into the market. Chicago paper representatives, jobbers and manufacturers representatives alike, report a more brisk demand since the first of the month and an encouraging firmness of all markets. While natural demand improves, local merchants are also doing everything within their power to co-operate in code practice matters affecting each particular industry. Ground wood and coarse paper executives comprised at least two of the groups meeting during the week to discuss code provisions and market conditions in general.

A strong sulphite bond market is reported to have characterized a fine paper market which enjoyed a fair amount of improvement after April 1. The kraft market reported a better demand with firm prices. Ground woods were slightly better and a more encouraging outlook reported. Paperboard representatives experienced a widening in buying while the chip board market locally was reported better. Books and covers shared in the improvement noted. The waste paper market, still a bit uncertain as to code provisions, particularly as far as labor was concerned, showed more strength, according to reports.

Hand Bill Trial Interests Paper Stock Trade

The efforts of a Chicago hand bill distributing concern to dispose of the majority of the hand bills it had contracted to distribute for department stores, through a waste paper firm instead of to store consumers has brought much attention to the waste paper industry during the past week. Tons of hand bills and circulars intended by department stores for distribution throughout Chicago it is alleged had been disposed of to the Pioneer Paper Stock Company instead of to retail consumers. Records of the Pioneer Paper Stock Company were introduced in the trial on charges of conspiracy through which the local hand bill company is now going. Records of Pioneer show that tons of these circulars and hand bills were sold to them as waste paper, the Pioneer Company having no knowledge, of course, that the hand bills were other than as the hand bill company had described. It's a new kind of a trial for Chicago and the press is giving it unusual attention. During 1932 and 1933 the hand bill company sold old paper to the Pioneer Paper Stock Company on 45 occasions, the average load being 10,000 pounds with several loads going over 20,000 pounds. The hand bill concern collected from both the department stores and the waste paper company thus eventually involving itself in the conspiracy count.

Watch City Paper Box Co. Formed

The Watch City Paper Box Company, Inc., has recently been organized and its factory located in Elgin, Ill. The company will immediately begin the manufacture of fancy set-up paper boxes and displays. The plant is located at Union and Chicago streets, Elgin, where 5000 square feet of space will be utilized. Because of the heavy demand for paper boxes in Elgin the local Association of Commerce expects to see this space increased to possibly 75,000 square feet before the end of the year. It is reported that the plant was located at Elgin because of strong local demand for paper boxes from other Elgin industries and because of other industrial advantages. W. Tortorelli, for eighteen years with a well known Chicago box manufacturing company, is president and treasurer; the vice-president, W. P. Wycowski, has had ten years of experience with a large Chicago plant, while the secretary, F. R. Grotzka, has been in the paper box manufacturing field for over twenty-two years.

Association Activities

Sixty coarse paper merchants, both members and non-members of the Chicago Paper Association, met in the English room of the Blackstone Hotel on April 3 to discuss code provisions, the feature of the meeting being a review of the method of submitting open price schedules. The meeting was in charge of M. A. McNulty, president, and was addressed by Joe Pirie, NRA code authority in this territory. A determined effort was made, say reports, to unite the entire coarse paper industry in this territory in a definite effort to abide by all code provisions.

Twenty-five ground wood executives met at the Stevens Hotel, Chicago, on April 5 to discuss various market matters with particular emphasis on the provisions of the code of fair practices governing the industry. L. L. Alsted, Combined Locks Paper Company, of Combined Locks, Wis., vice-chairman of the western division of the Ground Wood Association, presided at the afternoon session.

General News of the Trade

At a meeting of stockholders, held on April 4, E. J. Schmidt was elected president of Parker, Thomas & Tucker, to succeed W. D. Thomas, who died a few weeks ago. At the same meeting E. B. Schmidt was elected vice-president and A. B. Tucker, secretary and treasurer. Mr. Tucker represents the second generation in the affairs of the company. Mr. Schmidt, well known in paper circles, has been identified with Parker, Thomas & Tucker since 1911, receiving his previous experience—as did the three founders of the business—at the J. W. Butler Paper Company.

W. J. Tilden, sales representative of the Eastern Manufacturing Company, will return to Chicago on April 9 after a three weeks combined business and pleasure trip along the West Coast. He and Mrs. Tilden went by rail, stopping on the way in the interests of Eastern.

Assures Permanency of Forest Leases

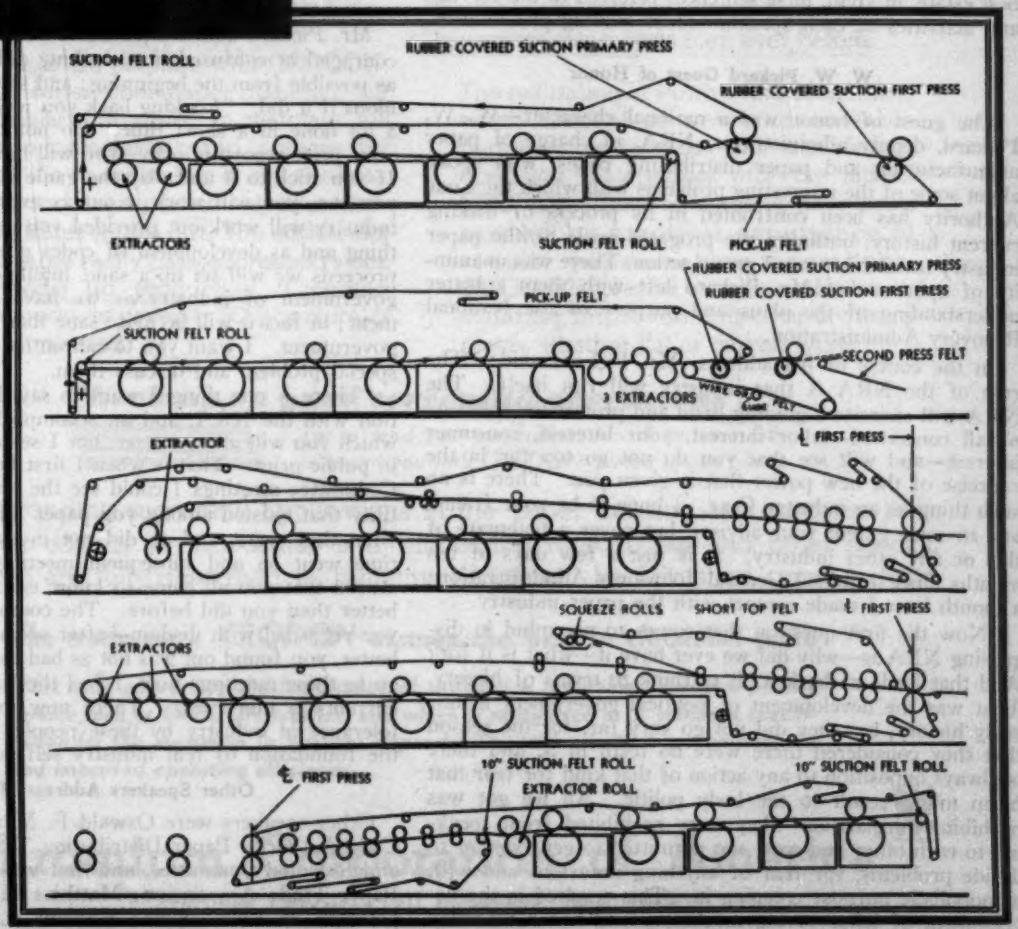
[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 9, 1934—Many holders of securities of pulp and paper companies will be delighted to hear that the Legislative Assembly of Quebec has put through in final passage the measure of Hon. Honore Mercier, Minister of Lands and Forests, in regard to permanency of forest leases, thus ending what has been the most contentious piece of legislation of the session, and one variously appreciated, but which is generally admitted to mean a new era as far as harassed and unpaid bondholders of the various pulp and paper companies are concerned. Bonds totaling some 480 millions of dollars are given greater security, legally speaking, under this measure.

DOWNINGTOWN

. . . *Advantages* of these Extractor Roll Installations Explained in New Catalog

• YOU HAVE possibly heard of mills using one to three Downingtown Extractor Rolls, and of others combining Extractors with one to four Downingtown Suction Press Rolls, plus one to three Downingtown Felt Cleaning Suction Rolls. In order to explain what you could obtain from any of these various installations, we have included in our new 24-page Extractor Roll catalog, a summary of the advantages of the arrangements pictured below. The catalog also explains how the Extractor eliminates picking, checking and blowing and permits safer running at higher speeds. Write for this catalog today. The Downingtown Manufacturing Co., Downingtown, Penna.



» » Downingtown Extractor Roll and Suction Felt Roll on Board Machine » »

INVESTIGATE THE DOWNINGTOWN (PATENT) WET END

Philadelphia Paper Trade Association Convenes

Meeting Held in Downtown Club Characterized by Its Representative and Numerical Attendance—Deputy Administrator W. W. Pickard Discusses Problems Confronted by Code Authority—Praises Feeling of Tolerance in Paper Industry

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., April 9, 1934—Despite the expectation of some letdown after Easter, the trade here generally continues to hold its gains. Maintaining its high plane of excellence, all past standards of the gatherings of the Philadelphia Paper Trade Association, the meeting held on Wednesday, April 4, at the Downtown Club in the Ledger Building, stands out in vivid memory, not because it was the latest in the long chain of these functions but because—in the words of T. H. B. Smythe, president of the association and member of Second Regional Committee Paper Distributing Trade Code Authority—it was characterized by its representative and numerical attendance. Mr. Smythe presided, and after making routine announcements, turned the meeting over to Norbert A. Considine, vice-president in charge of Fine Division, and Member of Second Regional Committee Paper Distributing Trade Code Authority, who, in the presence of upwards of 450 members and their guests, representing the paper trade in its best estate, in vivid, terse sentences referred to the services and activities of each speaker before making presentation.

W. W. Pickard Guest of Honor

The guest of honor was a national character—W. W. Pickard, deputy administrator, NRA, in charge of paper manufacturing and paper distributing codes, who spoke about some of the interesting problems with which the Code Authority has been confronted in its process of making current history, outlining the progress made by the paper industry toward improved group action. There was unanimity of opinion that Mr. Pickard left with them a better understanding of the plans and purpose of the National Recovery Administration.

In the course of his address, Mr. Pickard said: "The rule of the NRA is that industry will run itself. The NRA will exercise a guiding hand and protect the interests of all concerned—labor interest, your interest, consumer interest—and will see that you do not go too far in the exercise of the new power that is given you. There is no such thing as an industry Czar. I hope to be your friend, and to some extent your adviser, but never a potentate of this or any other industry. It is just a few days of ten months since I joined General Johnson's Administration; a month later I made contact with the paper industry.

"Now the first question that comes to my mind in discussing NRA is—why did we ever have it—what is it for? And that leads us back a bit to think in terms of history. That was the development of political government in our early history, but they did not go very far, for the reason that they considered there were no teeth in it, and there is always opposition to any action of that kind for fear that harm might result to the body politic. All we got was prohibitory legislation—they were prohibited from speaking to each other and were not permitted to get together to decide problems, for fear of anything nefarious and with monopolistic purpose creeping in. This resulted in the development of labor saving machinery and had a tendency to force down wages, and it never seemed to occur to anyone during that period that every time wages were reduced the buying power of the entire country was reduced and the effect was a vicious circle.

Discusses Newsprint Situation

"In the case of newsprint, the present price is less than cost for manufacture. We have now worked out a plan in which we are going definitely into the question of price fixing, and here let me say with regard to price fixing that price fixing is just as illegal as it ever was and subject to penalty and these penalties will be brought into play where price fixing exists. This plan is looked on with favor by the Recovery Administration and is regarded as the first major departure in Government Code policy against consumer or labor voice in directing management of the industry. The personnel will consist of nine members—three newspaper publishers, three members of the newsprint industry, two will represent labor (one in the newsprint industry, and one in publishing); the ninth member, the chairman, would be a disinterested person. Domestic newsprint men argue that they cannot stand cost increases without controlling foreign competition."

Mr. Pickard admonished all those present not to be discouraged or confused if everything did not work as nicely as possible from the beginning; and said it would be miraculous if it did. "Looking back you will find there has been a lot done in a short time. Do not be discouraged with your price reporting plan—you will have plenty of trouble. If you stick to it and play the game right and do the best you can, you will work it out as every other problem of industry will work out provided you get team work on the thing and as development of codes goes on and legislation proceeds we will set up a sane, intelligent body of law for government of industry as we have in political government; in fact it will be more sane than we have in political government. I want you to call on me to help you in your special problem and discuss them.

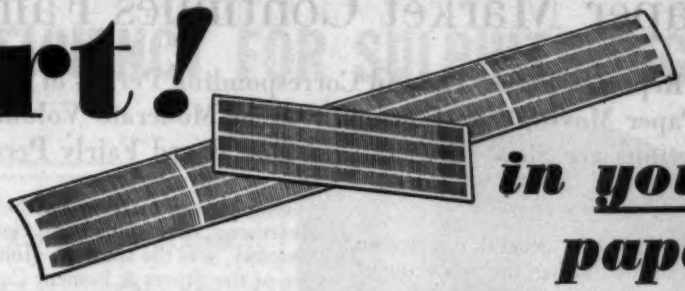
"There is one thing I want to say, however, in connection with the NRA, and an accomplishment of the NRA which you will all recognize, but I seldom see it mentioned in public print. That is when I first began attending Code Committee meetings I could see the undercurrents of hostility that existed among you paper men. I did not know what they were, and so did not investigate them, but as time went on and subsequent meetings were held, I observed that you all came to know each other a great deal better than you did before. The competitor who many of you regarded with disdain—after seeing and knowing him better, you found out was not as bad as you thought. As I go to these meetings now, I feel the force of these undercurrents is much less. There now exists the feeling of tolerance in industry by these people, and I think that is the foundation of real industry self-government."

Other Speakers Address Meeting

Other speakers were Oswald F. Marquardt, member of Code Authority Paper Distributing Trade; chairman, Second Regional Committee, and first vice-president, National Paper Trade Association; Matthias Maull, president, Typothetae of Philadelphia; William A. Hentz, immediate past president of the Philadelphia Paper Trade Associa-

(*Continued on page* 52)

Dirt! in your paper?



Clean paper can be made only with the essential aid of the most efficient screening operations. Too wide slots, forced velocity, partially clogged screens and short useful screen plate life . . . . these are productive of low quality, high cost and dissatisfaction.

CRODON
The Chrome Plate

Let us tell you how to cure these ills with chromium plate . . . . . .

Worn, rough and inaccurate slots result from normal wear of ordinary plates. CRODON provides a permanently hard, durable protection against corrosion. Fine precision of slot dimensions is accurately maintained.

Fine slot sizes are possible with CRODON: not only is cleaner, finer paper obtained, but it is unnecessary, in order to maintain full production, to force velocity and increase dirt count. Scientific co-ordination of slot sizes can be arranged and kept permanent, thus introducing long fibres minus dirt. The added slot smoothness more easily passes screened stock without slowing up production. Clogging (which often reduces capacity 50% or more) is practically eliminated.

CRODON-plated screen plates attain long useful life. The unduly prolonged use of inefficient screens is no concern of mills which have installed chromium-plated plates—they're making cleaner and better paper at lower screening costs than ever before.

The realization of worth-while economies, establishment of new and enviable performance records and trouble-free operation materializes with the aid of CRODON. These attainments have been proved by practical experience of regular paper-making operations. CRODON-plated screens offer outstanding improvements over ordinary plates, whether flat or curved types.

Check up on your screening operations . . .

Let us send you our Bulletin No. 9 to more fully acquaint you with CRODON-plated screen plates.

Other outstanding successful applications in the paper industry are on press rolls, suction box covers, drying drums and embossing rolls. These and other specific applications are fully described in bulletins which will be furnished upon request

The trade-mark CRODON assures the best in chromium plate

Most mills appreciate the importance of utilizing a reputable chromium plating service such as CRODON typifies, and which is recognized as a standard specification for the maximum in quality: dependability with resultant cost reductions, and improved operating efficiency.

Chromium Corporation of America

Executive Offices—120 Broadway, New York

P. O. Box 1546, Waterbury, Conn. | 3125 Perkins Ave., Cleveland, Ohio | 4645 West Chicago Ave., Chicago, Ill. | 187 East Becher St., Milwaukee, Wis.

Boston Paper Market Continues Fairly Steady

Fine Paper Business Reported Better Than in Corresponding Period of Preceding Year—Kraft Wrapping Paper Moving Into Consumption in Moderate Volume, Although Collections are Slow—Demand for Box Board Fairly Persistent

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 9, 1934—In general the Boston paper market held fairly steady during the week under review, reports ranging from "quite slow" to "good" and "better since April 1." With one house, business was better in fine papers during March than it was the same month a year ago. There was a fair volume of sales of wrapping paper, but collections are slow. The box board market was fair.

The paper stock market was not particularly active. In old papers, the situation was quiet, the mills not buying very much. No. 1 books, heavy, declined to .85 @ .95 from .90 @ 1.00 and white blank news to 1.05 @ 1.10, compared with a former range of 1.10 @ 1.15, although No. 1 mixed papers held at .20 @ .25 and old newspapers at .35 @ .40. Bagging was barely steady, with some tendency towards weakness. New and old domestic rags were quiet. Few, if any sales were transacted in foreign rags, owing to the condition of Exchange.

News of the Trade

Meetings of the Fine and Wrapping Paper Divisions of the New England Paper Merchants Association were held at the Boston Chamber of Commerce Monday and Thursday respectively. At each meeting in a round-table discussion, a movement was started to expedite the operation of the price-reporting plan. William N. Stetson, Jr., was the presiding officer at the meeting of the Fine Paper Division and F. Bendel Tracy at that of the Wrapping Paper Division.

The activity of the campaign on Trojan Bond, being conducted by the American Writing Paper Company, and the returns from the mailing pieces, is the best of any campaign of the company in recent years.

At the Boston office of the Brown Company it was stated that the concern was busy, with all the machines in operation at the Berlin plant last week.

John Carter & Co., Inc., have issued a revised price list of their several lines.

A sales meeting was held Saturday morning at the office of Carter Rice & Co., Corp., at which Kimberly Stuart, second vice-president and secretary of the Neenah Paper Company, Neenah, Wis., discussed Chieftain Bond and Success Bond. The latter, a 75 per cent rag bond, will be stocked by Carter Rice & Co., who will be exclusive New England agents for the paper. Frank Winter, sales manager, presided at the meeting.

The new Strathmore Wedding Display is now being distributed to stationers and engravers by Carter Rice & Co., Corp., New England agents for the Strathmore Paper Company, West Springfield, Mass. The display consists of a beautiful center panel, supplemented by two side cards, showing engraved specimen sets. A new feature of the Strathmore Wedding advertising program is a counter sampling folder. This folder is planned for distribution to stationer and engraver customers for counter use. An attractive drawing of a bride appears on the front cover. Inside are mounted the same specimen items that appear on the window display side cards.

At the office of the Storrs & Bement Company, Friday evening, a sales meeting was held in regard to the Warren advertising campaign. Ed Geist, of the S. D. Warren Company, was the speaker. John H. Brewer, general manager of the Storrs & Bement Company, presided. Another meeting, at the office of the same company, was held Saturday morning for salesmen having lithograph customers. Mr. Brewer was in charge.

The Newton Paper Company, of Holyoke, Mass., has taken an office in Room 337, Chamber of Commerce Building, 80 Federal Street. William W. Newton is Boston representative.

George D. Allen, treasurer of Knight, Allen & Clark, Inc., who was away from his office all last week on account of illness, expects to return today.

Jerry Whale, of the Gilbert Paper Company, Menasha, Wis., will be with the Andrews Paper Company this week in the interests of his firm.

C. G. Gay has joined the organization of Munro & Church, box board dealers, in a sales capacity.

Sacandaga Reservoir Benefits Paper Mills

[FROM OUR REGULAR CORRESPONDENT]

CONKLINVILLE, N. Y., April 9, 1934—The newly constructed Sacandaga Reservoir is proving of great benefit to paper mills in this section and full time operations are now carried on during periods of drought. A few years ago, mills in this section were forced to shut down when their water supply became exhausted, but controlling the waters of the giant reservoir, 27 miles long, has changed this procedure. Among the concerns benefiting from the reservoir, and defraying the cost of its construction, are Finch Pruyn & Co., of Glens Falls; International Paper Company, Union Bag and Paper Corporation, of Hudson Falls; Fort Miller Pulp and Paper Company, Morrel Manufacturing Company, and several others. The regulation of the waters of the reservoir provides a steady supply of power for the several mills at all times of the year in addition to maintaining a channel for the Port of Albany. The huge reservoir was constructed by the Hudson River Regulating Board at an enormous cost. Edward H. Sargent is chief engineer of the Board and supervised the building of the reservoir.

Alan Chandler Named General Manager

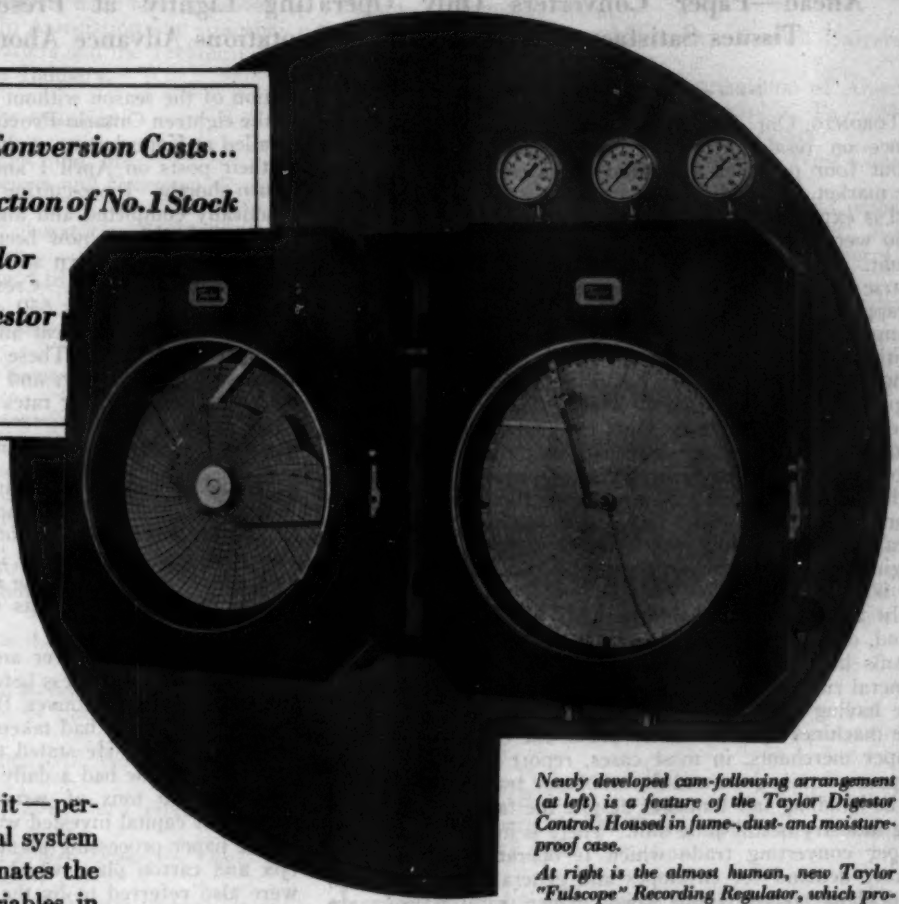
PITTSBURGH, Pa., April 9, 1934—Alan Chandler has been named vice-president and general manager of the Pittsburgh division by directors of the Alling & Cory Company, wholesale paper merchants. He will fill the vacancy caused by the recent death of Thomas Kirby Cree.

During 27 years with the company, Mr. Chandler has served in practically every department in the Pittsburgh office. He became assistant sales manager in 1920, sales manager of the fine paper department in 1925, and a director in 1926. In 1929 his position was broadened to include the managing of both sales and merchandising.

Mr. Chandler is a past president of the Central States Paper Trade Association, chairman of the Pittsburgh Association and a member of the board of the National Paper Trade Association. He is on the board of the code authority of the wholesale paper distributing trade in this district.

NEW EFFICIENCY FOR SULPHITE DIGESTORS

Obtain Lower Conversion Costs... Increase Production of No. 1 Stock with This Taylor Automatic Digestor Control



Newly developed cam-following arrangement (at left) is a feature of the Taylor Digestor Control. Housed in fume-, dust- and moisture-proof case.

At right is the almost human, new Taylor "Fulscope" Recording Regulator, which provides the most accurate and efficient temperature and pressure control obtainable.

TAYLOR has done it—perfected a simple, practical system that controls and coordinates the two most important variables in your cooking cycle—temperature and pressure.

Taylor Control of Sulphite Digestors is entirely automatic over 90% of the cooking cycle. It enables your plant to schedule cooking operations within a few minutes. It insures the production of uniformly high quality stock.

This exact spacing of cooking cycles means savings to your steam plant. "Tailing" losses are reduced to the minimum. The bleaching qualities of your stock are so improved that you make real savings in bleaching chemicals, too. By eliminating many manual operations, operators are freed to handle other details of the job more efficiently. Taylor Automatic Digestor Control raises the efficiency of your whole digestor operation.

Nothing has been overlooked. Even variations in gas pressure are automatically compensated for in the steam flow control. Maximum gas is diverted to the reclaiming system before the digestor is blown, through relief valve control.

The Taylor Digestor Control System is easily adapted to all standard vertical-type digestors using direct steam supply method. Send today for further information. Taylor Instrument Companies, Rochester, New York, or Toronto, Canada.

Just a turn of the screwdriver to obtain the one best sensitivity for a given process. This sensitivity control is just one of 8 advantages in the new Taylor "Fulscope" Recording Regulator.

Taylor

Indicating | Recording • Controlling

TEMPERATURE and PRESSURE

INSTRUMENTS

Fine Paper Mills Fairly Active in Ontario

Several Plants Manufacturing Book, Bond, Offset and Writing Papers, Have Some Orders Ahead—Paper Converters Only Operating Lightly at Present—Demand for Tissues Satisfactory—Coarse Paper Quotations Advance About 4 Per Cent

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 9, 1934—Effective April 1 an advance on resale prices of coarse papers in Canada of about four per cent all round considerably strengthened the market. The advance takes in kraft, fiber and manilas and is expected to afford some relief to those in the trade who were forced of late to operate on a small margin of profit. There has been considerable price-cutting in the coarse paper field and until a few months ago, when the wrapping paper association came into being, keenness of competition was proving more or less ruinous to the trade. With a first-class organization now in existence the wrapping paper trade has been put on a good basis and coarse papers should soon be on an average level with fine paper lines. Coarse paper merchants say that demand for their products is picking up materially and that a steady improvement has been evidenced during the past three months, although there is still a disposition on the part of the consumer to buy in small lots. But trade as a whole in wrappings is a great deal less spotty than it was at the beginning of the year and a steady improvement from now on is looked for.

In the fine paper field the mills manufacturing book, bond, offset and writings are fairly busy and some of the plants have some orders ahead, although this is not the general rule. The fact remains, however, that sales forces are having less difficulty securing enough orders to keep the machines busy than they did at the close of last year. Paper merchants, in most cases, report demand for fine papers as quite good and the wholesale trade would appear to be handling fair tonnages despite the fact that the printing industry is still quite dull. There is little change in the paper converting trade which is operating lightly with spotty demand for envelopes and general stationery lines and blank books. Light weight paper manufacturers are real busy under a good demand for tissues, toilets and specialty lines, while a good business is being done by manufacturers of waxing, greaseproof and glassine lines. There is likewise quite a good call for Canadian-made blanks, manilas, blottings and cover papers. The paper box industry continues quiet and the board mills are all operating lightly.

Government Supplying Pulpwood to Abitibi

The Thunder Bay mill of the Abitibi Power and Paper Company will continue to operate for an indefinite period through the co-operation of the Ontario Government and interested parties, T. W. Brackenreid, manager of the Port Arthur Utilities Commission, announced at the beginning of April. Additional wood will be placed at the mill. The Hon. William Finlayson, Minister of Lands and Forests for Ontario, stated in Toronto that owing to running out of material the mill had been in danger of closing down, but the Government was arranging to get the company a greater supply of pulpwood in order that it may be kept going.

Threatened Strike Averted

Threatened strikes among 1,400 pulpwood workers in nine camps of the Spruce Falls Power and Paper Company at Kapuskasing, Ont., have been averted, according to word received in Toronto and indications point to a completion of the season without serious disturbance. Several of the eighteen Ontario Provincial constables who had been detailed at Kapuskasing at the end of March had returned to their posts on April 1 and the rest were scheduled to return shortly. Piece-cutting operations for the season are practically completed and about 700 men engaged in this class of work have now been paid off. Of these around 500 still remain in town and all local hotels are overtaxed to accommodate them. Crews of teamsters and loaders totalling approximately 650 still remain in the camps for hauling of the winter cut and will probably stay for the spring river-driving. These men are continuing to work at the old rate of pay, and apparently do not intend to hold out for the higher rates they recently demanded.

Notes and Jottings of the Trade

March 23 was an important anniversary for Provincial Paper, Ltd., and S. F. Duncan, the president. On that date he and the late I. H. Weldon took over the old Cornwall Paper Company and made it pay from the start. Running the siding clear to the mill, instead of trucking coal several hundred yards was one of the little things they did to save money.

J. A. Young, treasurer and acting manager of Pacific Mills, Ltd., in an address before the Advertising and Sales Bureau of the Vancouver Board of Trade, outlined the development which had taken place in his company's plant at Ocean Falls. He stated that the industry was started in 1902 and now had a daily output of 250 tons of newsprint and 50 tons of wrapping paper, while the total amount of capital invested was $25,000,000. Development of the paper processing plant at Vancouver and the paper box and carton plant which was established a year ago, were also referred to by the speaker.

The Victoria Paper Box Co., Ltd., has filed formal application with the registrar of companies at Victoria, B. C., for approval of the change of the firm's name to Victoria Box and Paper, Ltd.

A provincial charter has been granted to the St. George Pulp and Paper Company, Ltd., with headquarters at St. George, N. S., and a capital stock of 100 shares without nominal or par value. The company is empowered to carry on in all its activities pulp and paper and general lumber business. Another charter has been granted St. George Properties, Ltd., with head office at St. George. This concern has an authorized capital of 1,000 shares, no par value, to take over the real estate and power owned by the new pulp and paper company.

Abitibi Power and Paper Company, head office Toronto, has put another paper machine in operation, making a total of six machines working. The addition will mean a rate of activity not touched since the fall of 1931. The machine will turn out 75 tons a day, bringing the mill's total output to 523 tons. More employees will be taken on, although the run of the sixth machine is expected to be only temporary.

Many friends in the paper trade of Norman E. Wainright, president of the Don Valley Paper Company, Toronto, were pleased to see him back in his office following several weeks spent in hospital following an operation.

Pulp Testing Chemists Approved

The following weighing, sampling and testing woodpulp for moisture pulp testing chemists have been approved by the American Paper and Pulp Association, the Association of American Woodpulp Importers and the Technical Association of the Pulp and Paper Industry.

Commercial Chemists

A. B. Andrews, Box 67, Lewiston, Me.

F. C. Broeman, F. C. Broeman and Company, Broeman Bldg., Cincinnati, Ohio.

T. J. Crossley, Industrial Laboratories, 71-73 Richmond street, W., Toronto, Ont., Can.

J. T. Donald and Company, Ltd., 40-42 Belmont street, Montreal, Que., Can.

Hamlin & Morrison, 216 South 2nd street, Philadelphia, Pa.

Abbot A. Hanks, Inc., 624 Sacramento street, San Francisco, Cal.

Milton Hersey Company, 980 St. Antoine street, Montreal, Que., Can.

Elmer S. Hinman, N. Walnut street, Spring Grove, Pa.

Emil F. Johnson, 133 Front street, New York.

F. W. Liepsner Laboratory, 309 Camp street, New Orleans, La.

K. Hv. Knudsen, 82 Gold street, New York.

Arthur D. Little, Inc., 30 Charles River road, Cambridge, Mass.

Arthur R. Maas Chemical Laboratories, 308 E. 8th street, Los Angeles, Cal.

George W. Miles, 88 Broad street, Boston, Mass.

New England Laboratories, 44 Chestnut street, Springfield, Mass.

Orthmann Laboratories, Inc., 647 W. Virginia street, Milwaukee, Wis.

Perry Testing Laboratory, 201 Third street, Detroit, Mich.

Everett J. Schwantes, Gulick-Henderson Co., Inc., 431 S. Dearborn street, Chicago, Ill.

Skinner & Sherman, Inc., 246 Stuart street, Boston, Mass.

Stillwell & Gladding, Inc., 80 West street, New York.

Harold E. Tiffany, Wilmington Testing and Research Laboratories, 321 Delaware avenue, Wilmington, Del.

Enrique Touceda, 943 Broadway, Albany, N. Y.

U. S. Testing Company, Inc., 1415 Park avenue, Hoboken, N. J.

Wiley & Company, Inc., Calvert and Read streets, Baltimore, Md.

F. M. Williams, Williams Apparatus Company, 600 Trust Company Bldg., Watertown, N. Y.

Lawrence Taylor Ross, Hudson Falls, N. Y.

F. W. Whittington, 530 W. Cedar street, Kalamazoo, Mich.

Pulp and Paper Mill Chemists

Harold M. Annis, Allied Paper Mills, Kalamazoo, Mich.

Allen Abrams, Marathon Paper Mills Company, Rothschild, Wis.

Henning J. Arbo, British Columbia Pulp and Paper Company, Ltd., Vancouver, B. C., Can. Mail: Woodfibre, B. C., Can.

Leslie K. Bickell, British Columbia Pulp and Paper Company, Port Alice, B. C., Can.

Harry C. Bradford, Rex Paper Company, Kalamazoo, Mich.

Wm. E. Breitenbach, Grays Harbor Pulp and Paper Company, Hoquiam, Wash.

John B. Calkin, Baker Laboratory, Cornell University, Ithaca, N. Y.

Harvey P. Cannon, Container Corporation of America, Philadelphia Div., Manayunk, Philadelphia, Pa. Mail: 6209 Morton street, Germantown, Philadelphia.

C. M. Connor, Glassine Paper Company, West Conshohocken, Pa.

N. W. Coster, Puget Sound Pulp and Timber Company, Everett, Wash. Mail: 1326 Grand avenue, Everett, Wash.

Edgar Desgagne D. Durand, Consolidated Paper Corporation, P. O. Box 45, Port Alfred, Que., Can.

G. P. Genberg, Fraser Companies, Ltd., Edmundston, N. B., Can.

J. Fenton Hogan, Carthage, N. Y.

Arthur Hunnemann, Container Corporation of America, 111 W. Washington street, Chicago. Mail: 900 N. Ogden avenue, Chicago.

W. K. Kidder, Bryant Paper Company, Kalamazoo, Mich.

H. C. Hoch, Auglaize Box Board Company, St. Marys, Ohio.

Frank D. Libby, Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich.

Wesley M. Osborne, 1213 S. Fife street, Tacoma, Wash.

Hyman L. Rammer, Fibreboard Products, Inc., Stockton, Cal.

B. K. Steadman, Standard Paper Manufacturing Company, Richmond, Va.

Dan. M. Wadsworth, P. O. Box 704, Bogalusa, La.

Sidney D. Wells, Combined Locks Paper Company, Combined Locks, Wis.

Denis Roberts, Port Royal Pulp and Paper Company, Ltd., Fairville, N. B., Can.

Ragnar Monnberg, Abitibi Power and Paper Company, Ltd., Smooth Rock Falls, Ont., Can.

C. T. Wright's Suit for Damages Dismissed

[FROM OUR REGULAR CORRESPONDENT]

WATERFORD, N. Y., April 9, 1934—An action brought by Charles T. Wright, former treasurer of the Mohawk Paper Makers, Inc., seeking damages for alleged injuries at the Beaver Mills here, has been dismissed in Supreme Court at Albany. He claimed that the injuries occurred while he was inspecting a warehouse which the concern had leased when a plank on which he was standing fell, plunging him through a platform with injuries to both legs. The accident happened in 1932 and the plaintiff claimed that the injuries undermined his health. Mr. Wright, who relinquished his position soon after the accident, is now serving as City Comptroller at Cohoes.

Congressman Snell for Paper Protection

[FROM OUR REGULAR CORRESPONDENT]

OGDENSBURG, N. Y., April 9, 1934—Congressman B. H. Snell has acknowledged receipt of a petition requesting further tariff protection for the newsprint industry which was forwarded to him by the employees of the Algonquin Paper Company. In his communication he said that as far as he was concerned he always believed that the industry should have the same protection as any other in the country and that he would support it as soon as the opportunity is presented. He said that he would file the petition with the federal authorities.

Industrial Water Problems and Their Correction*

By Sheppard T. Powell[1]

Abstract

The controlling factors in adequate water conditioning are indicated, and attention is directed to certain developments in the art influencing favorably the performance of such equipment.

Until recently, industrial water was considered generally as a necessary raw product and not as an engineering material subject to specific specifications. There is a marked trend, at present, however, in many industries towards more critical specification of water for processing and allied uses. These advanced ideas have been responsible for inaugurating constructive research to produce the desired product.

In the paper industry, as in other manufacturing establishments, where large volumes of water are used, the requirements may be classified under three major uses; namely, process water, water for steam generating requirements and for fire protection and general sanitary purposes. Few managers have a clear conception of the real importance of each of these requirements and where process water is of major importance, specifications for the other uses are partially or wholly ignored. Such viewpoints lead, frequently, to serious difficulty, affecting not only the general efficiency of the specific industry, but may result in heavy financial losses. Current water purification practice includes a number of mechanical, electrical or chemical processes, proper application of which is of the greatest importance in the preparation of an adequate and satisfactory supply.

The major difficulty confronting the industrialist is the decision as to the proper type of purification system that is best suited to the specific set of conditions encountered. Unfortunately, there is no universal process which is suited to all conditions encountered with different types of water. For this reason, the installation and control of the apparatus requires careful investigation and intelligent operation. Many forms of treatment, proposed in recent years, are wholly inadequate and without merit. It is not surprising, therefore, that plant managers are frequently confused by extravagant claims made for specific water treating systems proposed by vendors whose knowledge of the complexity of the problem may be limited.

The inherent difficulties encountered, however, are not subject to correction along generalized procedure, but require special engineering study before the adoption of a process is warranted. Where this viewpoint has been accepted and intelligently carried out, satisfactory performance is possible and the desired results will be obtained if the subsequent operation has been placed in competent hands. Conversely, a lack of intelligent appreciation of the problems involved has resulted all too frequently in serious and costly failures.

Coagulation, Decolorization and Filtration

The production of clear colorless water is necessary in many of the processes for the manufacture of paper and involves, primarily, two specific steps, namely, adequate pretreatment to coagulate suspended or soluble solids and effective filtration of the agglomerated particles. It is extremely difficult, except at very low rates of filtration, to meet these requirements if either the coagulating or filtration equipment is inadequate. The thoroughness of the preparation of water prior to filtration will vary widely in different localities, owing to the nature of the suspended or soluble solids carried by the supply. In every case, however, there are two fundamental principles which cannot be ignored. These are the use of the proper type of chemical coagulant and proper admixture of the chemicals and water. Within the last two or three years considerable knowledge on this subject has been acquired. For many years it was realized that proper mixing of chemicals and water was an important item for satisfactory water purification. The economic importance of this point, however, was not fully realized until quite recently. Many of the older water purification plants for both industrial and sanitary uses ignored adequate mixing of the chemicals, or where such facilities were provided they were poorly designed. There are numerous mechanical mixing devices now available which may be installed either in new plants or in plants now in operation, the cost of which can be justified by the savings effected by reduced chemical dosage. To accomplish this, however, requires proper adjustment of the mixing and contact period, speed of the rotating mechanism and other structural or operating details.

There are two general types of mixing devices. In one, the mixing paddles revolve in a horizontal plane and in the other the paddles revolve through a vertical plane. The value of mechanical mixing has been completely demonstrated at the Municipal Water Purification plant at Richmond, Va. The annual average dose of alum required to effect proper coagulation prior to the installation of the mechanical mixing was 4.47 grains per gallon, while after these devices were installed the dosage was 2.30 grains per gallon or a net saving of 2.17 grains of coagulant per gallon of water. This is equivalent to approximately 310 pounds of alum per million gallons of water. With alum at 1½ cents per pound, this would amount to $4.65 per million gallons of water treated. To this must be added the saving effected by reduced washwater requirements for backwashing filters, lower filter maintenance resulting from improved pretreatment of the water and other incidental losses. In one industrial plant under the supervision of the speaker, there resulted an average reduction in chemical costs of more than $20.00 per day following the installation of improved chemical mixing devices.

At the present time a number of research investigations are being conducted concerning the relative value and efficiency of iron and alumina coagulants. These studies have demonstrated that for certain waters, ferric salts, particularly the sulphate, possess specific qualities which make this form of coagulant preferable to others in the clarification of certain types of water. These coagulants are especially useful for the clarification of waters containing low alkalinity. They have merit, also, since the ferric compounds have a wide pH coagulating range requiring less careful adjustment of the isolectric point. The coagulum formed by these iron salts is bulky and possesses high absorptive properties.

The use of iron coagulants has not been considered favorably at mills processing water for white paper, owing to the danger of after-precipitation of iron following filtration or the tendency to increase the soluble iron content of the filtered water. For this reason, the use of ferric salts may be questioned. The answer to this objection depends upon

* Presented at the meeting of the New England Section of the Technical Association of the Pulp and Paper Industry, Holyoke, Mass., March 23, 1934.

[1] Consulting Chemical Engineer, Baltimore, Md.

the adequacy of the coagulation and filtration equipment. If the water conditioning system is properly designed and intelligently controlled there will be no danger of increasing the residual iron in the treated water.

Chlorination as an Adjunct to Coagulation and Filtration

The coagulation of suspended matter or the removal of color from certain types of water may require not only the use of a coagulant but supplementary chemical treatment. The use of chlorine in conjunction with coagulation and filtration has been an important development in the art in recent years. Under some conditions the use of chlorine is justified since it not only assures more effective filtration but actually reduces the amount of coagulant that would otherwise be required, thereby reducing the overall cost of operation. The specific advantages of prechlorination in connection with the operation of rapid sand filtration systems, when used for either industrial or sanitary purposes are:

1. Improved coagulation, resulting in better clarity of effluents with a lower residual iron and alumina content of the water so treated.
2. Reduction of coagulant required to produce a satisfactory water.
3. Better color removal.
4. Prolongs filter runs with resulting economy of wash water and the maintenance of cleaner filters.
5. Control of plankton (microscopic life) in coagulating basin and filters.

The use of chlorine for the control of slime growths in paper mills is well known and probably requires no comment from the writer. Prechlorination in connection with filtration is not so widely practiced. However, and it is probable that studies along these lines, at many plants, would be fully justified by the potential savings resulting from this form of treatment. For many years aluminum sulphate and ferrous sulphate and lime were the principal coagulants used for the clarification of water and these compounds still lead all others in the tonnage of materials employed for such usage. During recent years, however, there has been a marked trend toward the use of other chemicals and it is predicted that there will be considerable advancement in the art of coagulation as a result of current research in this field. Ferric chloride and chlorinated copper have been shown to be far superior for the coagulation of certain types of water than can be effected by alum and these chemicals have replaced alumina sulphate as a coagulating medium. The combination of these chemicals and also alum and sodium aluminate, has widened the field of chemical treatment of both public and industrial water supplies. More recently, ferric sulphate has been shown to be more desirable than the ferrous salt and it is predicted that the tonnage of ferric sulphate in connection with water treatment will increase rapidly in the immediate future.

Subsidence Basin Design

Design and operation of settling basins for removal of suspended solids prior to filtration is equally as important as the mixing appliances. The cost of operation of any treating system is markedly affected by the intelligence employed in the construction of settling basins. There are many industrial water-treating plants where the size of the basins could have been very greatly reduced if adequate mechanical mixing had been provided. The reduction in the installation cost of the basin, in many cases, will more than offset the cost of the mechanical agitating devices.

Where it is necessary to use surface waters carrying high amounts of mud continuously or at infrequent periods, the use of mechanical clarifiers is often justified. By the use of such equipment the gross amount of suspended solids can be removed from the basin continuously, thereby effecting marked reduction in the cost of other portions of the treating system. The unit cost of the filtered water can frequently be reduced by the installation of such appliances and the quality of the finished water improved. This type of equipment is not ordinarily adaptable to the relatively clear water in the New England states but has wide application throughout the middle west where the surface waters are frequently excessively turbid.

Filtration

The efficacy of a filtration system will depend on the thoroughness and the intelligence employed in the design and construction of the coagulating and mixing devices, type of filters used and the rates of filtration employed. Filtration of water for industrial uses is generally accomplished by either the pressure or gravity type. There are certain advantages and disadvantages pertinent to each of these systems and much difficulty can be avoided by choosing the type of filter best adapted to the local operating conditions. As a rule, pressure filters are given preference over gravity units in small installations. The advantage of this type of unit is that the water may be used directly from a pressure main or from the high pressure pumps, eliminating the necessity for secondary pumping. Such operation has an appeal to industrial management, since on first consideration there is an indicated saving in pumping costs. Notwithstanding this apparent advantage, gravity filters are frequently more desirable, since the operating saving resulting in time, justifies the added charges of secondary pumping.

Open-type gravity filters assure more satisfactory operation, since the sand beds can be readily inspected at all times. This type of unit is also to be preferred, since the rates of filtration are more easily controlled and the sand beds are always under a constant head, a desirable condition which is not readily secured by pressure-type units. Wherever it is necessary to secure process water entirely free from turbidity and color gravity type rapid sand filters should be chosen in preference to pressure units. In the final analysis as to the choice of equipment best suited to the existing or future requirements of the plant, the design of the water treating equipment should be very carefully considered. The cost of the engineering service in the preliminary studies and design features of a proposed treating system will be fully justified. Should local conditions require eliminating gravity filters, vertical pressure filters should be given second choice. Horizontal pressure filters are frequently employed especially where large units are required but they are much more difficult to operate than the vertical types. Whenever the installation of large horizontal units is under consideration, a comparison of costs between this type and open gravity filters should be made.

Boiler Feedwater Conditioning

Although satisfactory process water may be considered the major water problem in paper mills, satisfactory boiler feedwater is essential if the plant is to be operated efficiently and economically. The type of water treatment best suited for proper conditioning depends upon a number of items. These include the pressure and rating of the steam generating units, the percentage of new make-up water entering the boilers, the type of boilers installed, the chemical composition of the raw water supply, the heat balance of the station and the space available for the feedwater conditioning system. It is the purpose of feedwater treating systems to eliminate scale formation on the heating surfaces and to inhibit corrosion and embrittlement of the boiler steel. These results should be obtained without increasing the priming and foaming characteristics of the boiler water salines. There are so many factors which influence the preference of one type of water treatment over another, that specific recommendations may not be made until all conditions are

ascertained and evaluated. Failure to secure essential data on the chemical and physical characteristics of the water supply and the fluctuation in the chemical composition of such supplies are the most common causes for the installation of inadequate feedwater treating systems. Too frequently, the decision as to the choice of a feedwater conditioning process is made wholly on the basis of the initial cost of the treatment without a comprehensive analysis of the ultimate potential saving which may be secured.

The prevention of scale formation by the use of boiler compounds and various chemicals is the oldest form of boiler treatment and the increasing demands for good feedwater have stimulated the sale of such products. Some of these mixtures are positively harmful and many are without specific merit. On the other hand there are certain forms of chemicals that may be used within boilers which will produce relatively satisfactory results. Where conditions prevail which justify the treatment of water within the boiler in preference to more complete processing outside the boiler, satisfactory results may be accomplished if the product used is adaptable to the specific set of conditions encountered and the treatment is intelligently controlled.

Wherever possible, complete removal of scale forming solids from the water outside the boiler is desirable. There is now a trend towards supplementary internal chemical treatment of boiler waters, in the operation of high pressure boilers, to insure complete elimination of deposits, even when the feedwater has been conditioned by external chemical procsses. Phosphates, sodium aluminate and certain organic compounds are now being widely used. The necessity for such treatment is a matter of engineering judgment based upon intelligent analyses of local operating conditions. One of the primary reasons for supplementary treatment is for the inhibition of silicate deposits which may not otherwise be adequately controlled.

So much has been written in recent years concerning the embrittlement of boiler steel that there would seem to be little excuse for again presenting this problem and its solution before a group of technically trained persons. Notwithstanding the wide publicity that has been given the failure of boilers as a result of embrittlement these failures continue to occur. During the past year there have been many failures of steam boilers resulting from unbalanced water. Some of these failures occurred in plants having a staff of technically trained operators, and where the management had reason to believe that the feedwater conditioning was adequate.

There is still some controversy concerning the fundamental cause or causes responsible for the failure of boiler steel which is commonly known as embrittlement, or more frequently, caustic embrittlement. Few, if any, of the research workers who have studied this problem in recent years have been convinced that all the factors involved in such failures have been determined. There is sufficient evidence, however, to convince most engineers that chemical attack on boiler steel, under stressed conditions, is the cause of embrittlement. Practical experience covering twenty or more years completely confirms the findings of many of the research workers, that unbalanced water, namely, water high in sodium carbonate or bicarbonate and in the absence of appreciable amounts of sulphates can result, under some conditions, in cracking of boiler steel in a relatively short time.

When bicarbonates enter a boiler, they are decomposed by heat in a short time and converted to carbonates. Carbonates may be partially or completely removed from solution by any calcium or magnesium present, or in the absence of these metals they may remain in solution as sodium carbonate. If the feedwater is softened, calcium and magnesium will be largely removed, but the treated water will contain appreciable amounts of sodium salts. Sodium carbonate or hydroxide may also be introduced, as such, directly into the feedwater, depending upon the type of treatment employed. Heat may further decompose sodium carbonate into sodium hydroxide under steaming conditions. The extent of the conversion of sodium carbonate into the hydroxide will depend upon the boiler pressure, the rating, and other operating conditions.

It is generally believed that only the sodium hydroxide in a boiler saline is responsible for any embrittlement that occurs. Due to the difficulty, in many cases, of determining what part of the total alkalinity is due to sodium hydroxide, and what part is due to sodium carbonate, the total alkalinity, comprising both sodium carbonate and sodium hydroxide, is used in calculating the amount of sodium sulphate required for embrittlement prevention. The total alkalinity thus determined is calculated in terms of sodium carbonate. This is done in order that any error may be on the side of safety.

Briefly, the conditions which result in embrittlement may be characterized as a combination of stress beyond the yield point and chemical attack of the metal. The chemical attack is favored by high concentrations of sodium hydroxide, and low concentrations of sodium sulphate in the boiler salines. It is an established fact that the area of greatest stress in a fabricated boiler drum is in the riveted areas, and it is in this area that the cracking of the boiler steel resulting from embrittlement occurs. The action is brought about by combination of chemical attack and stress. This form of chemical attack follows grain boundaries. When the chemical action starts it is restricted to the outer surfaces but as chemical action proceeds along the grain boundaries, stresses are concentrated at these points and as a result of the accelerated stresses the chemical attack penetrates into the metal and results ultimately in cracked metal.

The presence of sulphates in sufficient quantities completely inhibits this action. Several theories have been advanced to account for the inhibition of embrittlement by sulphates. Up to the present time the most logical explanation is that the sulphate salt crystallizes on the surface and probably protects the metal by interposing a film over the surface. Whether or not this is actually the case must await further research in this field.

The solution of the problem of embrittlement is so relatively simple that with our enlightened knowledge on the subject, there is now little excuse for the continuation of such failures. The maintenance of a given concentration of sulphates in the presence of sodium carbonate or caustic soda in the concentrated boiler salines is all that is required to eliminate the potential possibility of this form of failure. The amount of sulphates required to inhibit embrittlement of the steel depends on the pressure at which the boilers are operated.

Phosphates, tannates, chromates and other materials have, under laboratory conditions, been shown to have possible value for inhibiting embrittlement of boiler steel. It is not safe, however, to depend on any treatment other than the maintenance of the proper ratios as recommended by the American Society of Mechanical Engineers. These ratios may be changed at a later date as a result of research work now in progress, but until official approval is secured the standard sulphate correction procedure should be adhered to.

Corrosion Problems

In paper mills, as in most other industries, corrosion problems are of major importance. Owing to time limitation, this discussion will be restricted to corrosion resulting from water only. There are many factors involved in the

corrosion phenomenon of ferrous or non-ferrous metals, the importance of which varies in each case. Corrosion of cold water supply lines may be partially controlled by correction of the hydrogen ion concentration of water and removal of certain non-condensible gases. Where chemical treatment is not effective or impractical the substitution of cement-lined or other inexpensive corrosion-resisting materials for iron pipe is warranted.

Boiler water corrosion can be largely inhibited by complete de-aeration of the feedwater and the correction of the hydrogen ion concentration of the feedwater to above 9.6. To limit the corrosion from dissolved oxygen, the residual oxygen in the de-aerated water should not exceed 0.03 cc. per liter and lower if possible. This can be accomplished by open feedwater heaters of the de-aerating type. Where the dissolved oxygen removal is not sufficiently complete chemical de-oxygenation may be effected by supplementary treatment with sodium sulphite, ferrous hydroxide or other reducing agents. It is preferable, however, to avoid the use of chemical de-aeration, if possible, but where used, such treatment should be very carefully controlled in order to avoid subsequent operating difficulties.

Adequate water supply for fire protection and a safe and potable drinking water supply are as essential in the operation of mills as process or boiler feedwater. Frequently, industrial managers fail to realize their legal responsibility in providing for such facilities and the potential danger to the health of workers resulting from interconnection of contaminated and uncontaminated water supplies. In many states, cross connections of polluted and unpolluted water supplies are prohibited but many operators are not impressed with the importance of these regulations. There are numerous cases on record of epidemics of water-borne diseases resulting from cross connections of contaminated industrial waters with safe drinking water supplies. In some cases these conditions have been the result of deliberate action by the management, but more frequently, such failures have occurred through ignorance or negligence. The higher courts have repeatedly ruled that epidemics traceable to such operation constitutes "criminal negligence," and municipal or industrial establishments are liable for damages. It is not only the duty of owners and operators of industrial establishments to protect their workers but it is actually a matter of self-preservation against damage suits. A number of cases have been investigated by the speaker where mill owners have been meticulous in prohibiting cross connections between polluted and unpolluted water supplies, but have made no effort to identify the two supplies, and workers had no way of determining the safe from the unsafe waters. A case of this kind was investigated a few years ago where a contaminated industrial supply was being used by a number of workers in the power plant of a large mill. The use of the contaminated water was followed by a very serious epidemic of dysentery. Fortunately, no deaths resulted, but the company sustained a heavy loss in caring for the workers afflicted.

A frequent source of potential danger is the transmission of disease from contaminated water resulting from the use of unsanitary drinking fountains. It makes little difference if the drinking water supply furnished to workers is safe if the drinking fountains used are of the type which permits the transmission of disease from one user to another. The U. S. Public Health Service and, more recently, the Women's Bureau of the U. S. Department of Labor, has drawn attention to this potential danger and in a report published in 1931 elaborate specifications for sanitary drinking fountains were published. It has been definitely proven by bacteriological studies that vertical jet fountains retain disease germs, present in them, for a considerable period of time and such contamination can be and is readily transmitted from one person to another. The writer investigated this condition a short time ago in a large industrial establishment employing more than 2,000 persons. In this establishment there were 29 drinking fountains and not a single one of these units provided the necessary protection against the transmission of disease. In every case these facilities constitute a very definite potential hazard to the health of workers using these appliances.

An Invitation to TAPPI

New York, March 29, 1934.

EDITOR PAPER TRADE JOURNAL:

Our board of directors has approved the recommendation of the Mechanical Committee with reference to admitting to the Mechanical Conference this year, under certain conditions, representatives of manufacturing and supply companies affiliated with the newspaper business. This, of course, includes newsprint manufacturers.

The conditions are as follows: Only one representative of each company will be admitted. The company must make application to the Mechanical Department and upon receipt of this application a letter or card of admission or other means of identification will be issued for presentation at the registration desk. Representatives of manufacturers and supply companies will not have the privileges of the floor and will not be allowed to participate in the discussions unless called upon by the presiding officer.

Please understand that we are not issuing invitations, but that a card of admission or an invitation (if it may be called such) will be issued only upon request. Personally, I am heartily in favor of this policy and hope that we have a considerable number of such representatives present. I shall be glad if you will call this matter to the attention of the members of the TAPPI.

The Mechanical Conference will be held this year at Hotel Statler, St. Louis, on June 4, 5 and 6.

A considerable number of people have expressed a hesitancy to attend a meeting in June for fear of the heat. I am assured, however, by people who are familiar with St. Louis, that the weather is usually very comfortable in early June. One reason for selecting the Statler Hotel as headquarters is that this hotel has a meeting room on the 17th floor, above the roof garden, which has windows on two sides. Another attraction of St. Louis is that there are three modern newspaper plants which will be open for the inspection of those attending the Conference. These are the main plant of the *Globe-Democrat*, which was opened a year or two ago; the branch plant of the *Post-Dispatch*, and the new plant of the *Star-Times*, which will be open and running before the dates of the Conference.

Yours very truly,

W. E. WINES, Mgr., Mechanical Department.
American Newspaper Publishers Association.

New York Men Get Papermaking Patents

WATERTOWN, N. Y., April 9, 1934—Charles W. Valentine, president of the Bagley & Sewall Company, and F. A. Helin have been awarded a patent for a uniform speed reel, according to announcement last week. The invention is described as an important factor in the complete paper making machine. The uniform speed reels draw the finished paper from the calender, winding it into rolls and it is then rewound on the winders for shipping.

Announcement was also made of the issuance of a patent for a method and apparatus for producing bags to T. Earl Coty, vice-president of the Coty Paper Bag Machine Company.

Obituary

Alton Farrel

Alton Farrel, for thirty years a director and treasurer of the Farrel-Birmingham Company, Inc., Ansonia, Conn., died Wednesday night, March 28, at his home, 367 Prospect street, New Haven, Conn., after an illness which had caused his retirement from active business over a year ago.

Mr. Farrel was born in Ansonia, August 22, 1879. He was the son of Alton Farrel and grandson of Franklin Farrel, founder of the Farrel Foundry and Machine Company. He attended the Ansonia public schools, later entering St. Paul's School, Concord, N. H., to prepare for college. After graduating from Yale University in 1902, with a degree of B.A., he entered the employ of the Farrel company, which he served in various capacities during the remainder of his life.

Mr. Farrel was also a director in a number of other financial, industrial and public utility corporations in the Naugatuck Valley and was interested in civic and public affairs. He was president of the Gaylord Farm Association of Wallingford, an institution for the treatment of tuberculosis, president of Ansonia Public Library, director of Pine Grove Cemetery Association and a senior warden of Christ Episcopal Church.

ALTON FARREL

For some years he was active in political affairs, serving as alderman and mayor of Ansonia, as a member of the Connecticut General Assembly, as a State Senator and as a Presidential Elector. He was an officer on the staffs of two Connecticut Governors. During the World War he served in the State Guard and later enlisted in the field artillery, officers' training corps, Camp Zachary Taylor, Louisville, Ky., but the armistice ended hostilities before he was called to active duty.

Mr. Farrel was a member of the Union League and Yale clubs of New York City, Waterbury Club, Country Club of Waterbury, Pine Orchard Country Club, Race Brook Country Club, New Haven Country Club, Quinnipiac Club and Graduates' Club of New Haven. He was a 32nd degree Mason and a member of Ansonia Lodge, B.P.O.E.

He is survived by his wife, Hazel Edison Farrel, whose father was a double-first cousin of the noted inventor, Thomas A. Edison, and two sons and a daughter.

Funeral services were held Saturday morning, March 31,

Fred L. McClellan

[FROM OUR REGULAR CORRESPONDENT]

MINNEAPOLIS, Minn., April 9, 1934—Fred L. McClellan, who established the McClellan Paper Company, in Minneapolis in 1894 and continued at its head until his retirement in 1929, died March 30 at his home in Los Angeles, friends here learned. He was 67 years old.

During his career, an outstanding business man in the northwest, Mr. McClellan was almost as noted for his outstanding fight against a physical handicap, which threatened his life at the time he started his company, as he was for his business enterprise.

An invalid, Mr. McClellan worked for another paper concern for several years before he decided to start a business of his own. Doctors told him the strain would endanger his life, but he determined to go ahead despite the fact that his total capital amounted to only $75.

His retirement found him a golf enthusiast, capable of doing a day on the links with any of his associates or business friends and with a keen interest in many other sports and outdoor activities.

Mr. McClellan started business in a basement of a store at 20 Third Street North, and went out himself to solicit trade. Business began to thrive and in the next five years he moved several times into larger quarters. Finally in 1912, he built his own building at 700 Fourth Street South, where the paper company still does business.

In his enthusiasm for his new enterprise, he forgot all about the physical handicap which had prompted the physician's warning and as business thrived, his health also improved until finally, he was completely cured.

While in Minneapolis, Mr. McClellan was a member of both the Minneapolis Athletic Club and the Rotary Club. One of his prized possessions was a membership in the former organization dating back to 1890, when business men used to gather in a gymnasium located at 243 Nicollet Avenue.

Mr. McClellan is survived by his wife and by a son, Wallace F. McClellan, both of Los Angeles.

Thomas Warren Morse

Thomas Warren Morse, of 27 Spruce Street, Ridgefield Park, N. J., died at Holy Name Hospital, Teaneck, recently, following illness of less than a day. He was 72 years of age.

Recognized as an outstanding executive in the paper manufacturing business, Mr. Morse settled in Ridgefield Park in 1895, and four years later founded the Little Ferry Paper Company in 1899. In 1907 that firm merged with the Flintkote Company, which still operates a large plant in Ridgefield Park. He remained as manager of that company until 1929, when he resigned.

A year later, Mr. Morse was summoned back to the firm in an advisory capacity and continued there for almost three years. Executives of the company were negotiating for him to return again at the time of his death.

Mr. Morse is a descendant of a long line of shipbuilders. The Morse family achieved national fame as builders at Bath, Me., where Mr. Morse was born.

Miss Morse is the only immediate survivor. Others who survive are the Misses Anne and Emma Alden, nieces, and Horatio Alden, a nephew, of Camden, Me.

He was a second cousin of Charles W. Morse, noted shipbuilder.

Mr. Morse's wife, the former Mary Jane Lonegan, born in Tipperary, Ireland, died about eleven years ago.

Mr. Morse was well known for his philosophical and charitable endeavors. A student and reader of great extent, he often contributed published articles in magazines.

American Writing Paper Report

In submitting his annual report, Sidney L. Willson, president of the American Writing Paper Company, Holyoke, Mass., made the following statement:

"The Consolidated Balance Sheet and the Consolidated Profit and Loss and Capital Surplus Account show the results of operations for the year 1933 to be as follows:

"The gross operating profit for the year 1933 was $878,135, compared with $606,767 in 1932. The profit after commercial expenses in 1933 was $367,610 compared with $19,635 in 1932.

"The net loss for the year, after providing $630,543 for bond interest, idle property carrying charges and depreciation, amounted to $235,984 as compared with a net loss of $646,444 for the year 1932. This is a reduction of $410,460 from the net loss of 1932. There was also expended, but charged to operations, the sum of $171,036 for maintenance.

"For the first six months of 1933 the loss amounted to $237,964, compared with a loss of $246,615 for the same period in 1932. For the last six months of 1933, the profit amounted to $1,980, as against a loss of $399,828 for the same period in 1932.

"In accordance with the requirements of the Sinking Fund, there were delivered to the Trustees, bonds at par value of $105,500 to provide for the payment due January 1, 1934. There remains in the treasury $22,500 par value of bonds.

"The capital stock, less treasury stock, as shown on December 31, was $2,428,902, in conformity with the changes in capital structure authorized by the stockholders on June 8, 1933, when the $6,828,572 was transferred to capital surplus against which was applied the deficit existing on December 31, 1932, and the authorized write-down of the assets. As a result of the write-down in property values, the charge for depreciation is reduced 18 per cent annually.

"The cash on hand December 31 was $125,598, which is approximately $100,000 lower than the previous year, but the inventories in the meantime were increased approximately $200,000 to protect values against advances which have materialized.

"A suit instituted by the Holyoke Water Power Company, as a result of our tender of silver bullion as called for under our indentures was tried and judgments in our favor were rendered by both United States District Court and United States Circuit Court of Appeals, but further appeal may be made to the United States Supreme Court, providing the power company can obtain a writ. The amount paid for silver bullion has been charged into cost of operation.

"The gross sales for the year were $4,776,638, which comapres with $4,444,845 for the year 1932; an increase of 8 per cent. The tonnage sold in 1933 was 30,900 tons and in 1932, 24,800 tons, an increase of 24½ per cent, but with administration and selling expense 15 per cent less in 1933.

"Beginning with the year 1929, there has been a steady decline in the average price for paper in the entire industry, partially due to the destructive domestic competition, resulting in a large measure from over-capacity, and to foreign competition due to their depreciated currencies. The range of average prices in our own company declined from 10.1 cents per pound in 1929 to 7.3 cents in 1933.

"Higher labor and material costs, incident to the code requirements of the NRA have caused operating expenses to increase, despite the operating economies that have been effected.

"Since the first of the year it has been possible to readjust some prices upward to partially cover additional costs, but not sufficiently to reimburse the company's added expense, resulting from increased wage rates and shorter hours which affected not only the operations in your mills, but also in those mills from which we secure supplies of raw materials. There will be continued effort to maintain stabilized prices on a higher plane which should contribute beneficially in our future operations.

"From the above statement of tonnage sold, it will be seen that the Company has maintained its position in the industry; adding new agents where advantageous, developing new lines, and otherwise directing its activities to meet conditions.

"The balance sheet shows a ratio of current assets to current liabilities of 5 to 1, with a net working capital on December 31 of $1,343,276, a decrease of only $95,112 from December 31, 1932. The losses from bad accounts were approximately one-seventh of one per cent. All current bills were discounted at maturity, and early in January the tax payable liability was paid in full.

"The physical properties have been maintained in good condition, but during the ensuing year larger expenditures for capital improvements should be made."

Indianapolis Paper Demand Improves

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., April 9, 1934—With the passing of Easter and balmy weather much of last week, the trade in this area believes that business will assume a more staple level which perhaps will be indicative of the summer business. Volumes in all lines at this time are higher than they were a year ago even though some items are dragging as compared with business immediately after the first of the year. Not only is volume higher, but due to code provisions there is a stability in prices that is gratifying to the trade. The old practice of cutting one another's throats seems to have become passé, at least there is not the complaint along this line that was voiced during the last two years and more.

Stocks in local jobbing warehouses are becoming larger with the passing of the tax assessment period. Before assessment time the houses were down to bare necessities, but deliveries now are being made in larger volume.

Of interest to the local trade is the renewed activity in the graphic arts plants, not only here but in many sections of the state. Reports show that many printing and lithographing plants are making equipment installations, plant additions and actively preparing for more business. With this concrete evidence of optimism on the part of some big paper users, the trade itself is more confident of the future.

Last week saw about the first real sales of summer specialties. High temperatures ranging into the high seventies brought to mind the fact that summer is just around the corner and many dealers made purchases. The initial orders were not large, but a continued warm spell will cause a regular influx of orders. Demand for bags and wrapping papers also is good, particularly bags for the dry cleaning trade.

Local paper stock men are none too sanguine concerning business. Mill orders are not heavy even though prices are being held to about the same levels.

Suspends Rates on Waste Paper

WASHINGTON, D. C., April 9, 1934—The Interstate Commerce Commission has suspended until October 31 next the operation of certain railroad schedules which propose to cancel the commodity rates and apply in lieu thereof higher class rates or exceptions to class rates on scrap or waste paper, in carloads, from, to and between points in Indiana.

E. W. Backus Accused of Transferring Funds

WASHINGTON, D. C., April 7, 1934—Hearing of the special Senate committee investigating bankruptcy proceedings was enlivened today when Edward W. Backus, former president of the Minnesota and Ontario Paper Company, was accused of transferring $7,000,000 of its funds to a private company of his own for use in the stock market in 1929.

Mr. Backus previously had asserted that metropolitan banks, including the Chase National and the First National Bank of Boston, had forced bankruptcy of the Minnesota and Ontario Company, a $75,000,000 corporation.

He declared they had appropriated $1,100,000 cash and organized a bondholders' protective committee in which title to bonds was transferred to the committee in order "to consummate the robbery of a valuable property for a paltry sum."

John D. Faegre, attorney for the receivers, made today's charges against Mr. Backus. He produced checks to show that large amounts had been transferred to the Backus-Brooks Company of Minneapolis and immediately endorsed over to stock dealers by Mr. Backus's son, Seymour Backus.

Mr. Backus admitted that such a sum had been transfered, but said the Minnesota and Ontario Company owed his private concern an even larger sum. Mr. Faegre cited this as the reason why Mr. Backus was dropped, not only as receiver for the company, but as an employe at a salary of $40,000 yearly.

After testimony as to the cost of the receivership, Senator Nebert concluded that the receivers and their attorneys cost the Minnesota and Ontario Company only $105,000 annually, whereas the previous officials and attorneys had taken $156,000 a year.

R. H. M. Robinson, co-receiver, testified that operating losses of the company had been $43,000 in the last year, with a total loss of $684,000 in the twenty-five months of receivership under adverse market conditions.

At the conclusion of Mr. Backus's testimony, in which he again charged that the banks had forced into bankruptcy a company which the courts had declared solvent, doing this by withholding pledged loans to meet about $3,500,000 in immediate obligations, Senator Hebert said.

"Your situation is not different from that of thousands of other people at that time."

"But I had made arrangements for loans," said Mr. Backus.

"So had other people," Senator Hebert replied.

Mr. Faegre replied to Mr. Backus's charges that the receivers were wrecking the property of the Minnesota and Ontario Company, in which Mr. Backus and his close associates own 95 per cent of the stock, by explaining that the difference between the $96,474,000 of total assets at the time of the receivership and $83,147,000 at the present time was due to a difference in accounting methods and to a write-off.

This included $630,000 for uncollectable accounts, $2,000,000 on a complete inventory of logs, pulpwood, etc., and $5,000,000 on other inventories.

In reply to a question whether the receivership had been collusive, Mr. Faegre said that the bill for bankruptcy proceedings had been drawn by Mr. Backus's attorney.

Award for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 11, 1934—The Cauthorne Paper Company has been awarded the contract for furnishing the Government Printing Office with 1,000 pounds of red stereotype molding paper in 18-inch rolls at 9.5 cents per pound, bids for which were received on March 23.

Fox River Dam to Be Rebuilt

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 9, 1934—Rebuilding of the dam adjacent to the Interlake Pulp and Paper Company's mill on the lower Fox River at Appleton, Wis., has been authorized by the United States War Department. The government has appropriated $105,000 and the construction work probably will be started about June 1.

The existing timber dam was built in 1889 and its replacement with a modern concrete dam is necessary in the interest of navigation. The project is a part of the authorized project for the Fox River, providing for 27 locks and 16 dams to secure a channel depth of six feet from DePere to Montello, Wis., a distance of 125 miles, and a channel four feet deep from Montello to Portage, Wis., a distance of 31 miles. Bids will be requested as soon as official notice has been received by O. M. Skukrud, assistant U. S. engineer in charge of Fox River Valley improvement, stationed at Appleton.

Construction of the new government lock at Rapid Croche, five miles below Kaukauna, Wis., will be completed in about two weeks. The government has been working on this project for two winters.

Navigation on the Fox River probably will be opened for the season April 15, when barge shipment of coal and pulp to mills will be resumed.

Sluice gates all along the Fox and Wisconsin rivers were opened last week, due to heavy spring storms and sudden thaws causing a rapid rise of the water level. Thus far no flood danger has been reported and mills have not been hampered.

Holyoke Now Expects No Major Flood

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., April 10, 1934—Holyoke paper manufacturers are likely to get through the spring season with no major flood in the Connecticut river, it is now believed. This past week the waters rose to over seven feet over the dam and the Chemical Paper Manufacturing Company was forced to close down two of its machines for several days.

Demand for the higher grade papers is slow but with the coming of improved business this, it is believed, will be soon remedied. At present the cheaper grades are more in demand.

Paper Chemistry Institute Staff

APPLETON, Wis., April 9, 1934—Three additions are announced to the scientific staff of the Institute of Paper Chemistry, at Lawrence College, Appleton, Wis. Dr. Marion Buchanan, formerly of the University of Iowa, will engage in research work at the Institute. N. F. Kuettel, of Neenah, Wis., a graduate of Lawrence College, has been added to the staff of assistants to Dr. George McGregor and will work in the humidity room. Milton Schmitt, of Kaukauna, Wis., formerly of the University of Wisconsin, will assist Dr. George Monroe in tube calibration work.

Burrows Paper Co. to Build

LITTLE FALLS, N. Y., April 9, 1934—The Burrows Paper Company, through its attorney, Robert F. Livingston, has applied to the commissioners of the land office of the state for lands under water in the vicinity of their mill, in East Mill street.

The application defines the boundaries of the land, which now lies under the Mohawk River.

The company plans to fill in the land and erect a two-story addition to the present mill.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

South Hadley, Mass.—The Beveridge-Marvellum Company, 28 Appleton street, Holyoke, Mass., affiliated with the Beveridge Paper Company, 717 West Washington street, Indianapolis, Ind., and the Marvellum Company, Holyoke, has approved plans for new three-story and basement plant unit, 40x50 feet, at South Hadley, to be equipped for solvents recovery and allied service. It will cost over $40,000, with equipment. General contract has been let to P. J. Kennedy & Company, Inc., Holyoke. R. E. Palmer, 7 Montgomery avenue, Holyoke, is consulting engineer.

New York, N. Y.—The Miami Valley Coated Paper Corporation has been organized with capital of 100 shares of stock, no par value, to manufacture coated paper stocks, and will take over and succeed to the Miami Valley Coated Paper Company, 110 East Forty-second street.

Wilmington, Del.—Following recent appointment of receivers for the Jessup & Moore Paper Company, plans are under way for a reorganization of the company, under the direction of Eugene W. Fry, president and one of the receivers. The company operates several mills in this vicinity, including the Augustine Mills on the Brandywine River, Delaware Mills and Rockland Mills. Mr. Fry will act as receiver with T. McKean Chidsey, Philadelphia, Pa., attorney, in bond of $40,000, and will continue the operation of the business.

Baltimore, Md.—The J. E. Smith Company, 6 North Central avenue, manufacturer of paper boxes and containers, has acquired a former woodworking factory at 816-36 Leadenhall street, and will place work under way at once for remodeling and improving, preparatory to occupancy for a new plant. It is expected to have the unit ready for service within the next sixty days, when equipment will be installed by new owner. Large capacity will be arranged.

Trenton, Mich.—The Plymouth Felt Products Company, Inc., recently referred to in these columns, has taken out a charter under state laws with capital of $25,000, with headquarters at Plymouth, Mich., where mill will be operated. The company has taken over the felt division of the Trenton Fibre Products Company, Trenton, and will continue the business at Plymouth, manufacturing a complete line of packing, wadding and allied products. New company is headed by Russel P. Hoffmann, Plymouth.

Monroe, Mich.—The Consolidated Paper Company is holding to a high production schedule, giving employment to about 2,000 persons in different departments. A reduction in working hours recently has been arranged on a 36-hour-week basis, with advance of 15 per cent in wages. It is expected to hold to present operating basis for an indefinite period. The company also operates a branch mill at Aurora, Ill.

New York, N. Y.—The Seaboard Corrugated Paper Box Corporation, care of Emanuel H. Reichart, 305 Broadway, representative, recently organized with capital of 100 shares of stock, no par value, plans operation of local plant for the manufacture of line of paper boxes, corrugated containers and kindred packages.

Niagara Falls, N. Y.—The Kimberly-Clark Corporation, Packard road, near Pine avenue, manufacturer of paper products, has awarded general contract to Wright & Kremers, Inc., Main street, city, for new addition to local mill, recently referred to in these colums, to be five-story, 83x200 feet, estimated to cost close to $90,000, with equipment. Superstructure will begin at once. Structure will be used largely for storage and distributing service. Main offices of company are at Neenah, Wis.

Wausau, Wis.—The Minnesota Mining and Manufacturing Company, Forest street, St. Paul, Minn., manufacturer of sandpaper and other abrasive paper stocks, etc., is planning several new units at branch plant at Wausau, where an expansion program recently has been in progress. The new units will consist of one-story building for storage and distributing service, new shop units, and office structure. Entire program is reported to cost over $45,000, with equipment. Preliminary plans are under way at office of Toltz, King & Day, Inc., Pioneer Building, St. Paul, architects.

Spring Grove, Pa.—The P. H. Glatfelter Company, operating the Spring Grove Paper Mills, has resumed operations at its soda pulp mill, following curtailment for more than two years. Work has been in progress on reconditioning and improving equipment at the plant. About 40 men have been added to the working force. It is proposed to increase production in the pulp mill section at an early date.

Fulton, N. Y.—The Modern Tissues Corporation, manufacturer of tissue stock, etc., has filed notice of transfer of operations from Brooklyn, N. Y., to Fulton, and it is understood that principal offices will be maintained here in the future. New York offices are at 230 Fifth avenue.

Shelby, Ohio—The Carton Service Company, manufacturer of paper cartons and containers, is running on an increased production schedule, and reports orders over 60 per cent in excess of this time a year ago. It is expected to hold to present operating basis for an indefinite period.

Port Angeles, Wash.—The Fibreboard Company, Inc., is considering an expansion program at local plant, including improvements in present units. It is proposed

to provide additional machinery and equipment to increase capacity from 36 to more than 50 tons per day. Work is expected to begin at early date. An official estimate of cost has not been announced.

New Companies

Cambridge, Mass.—The Cubell-Taylor Company, Inc., has been organized with capital of 2,000 shares of stock, no par value, to manufacture and deal in paper products of various kinds. S. Robert Taylor, 18 Alton place, Brookline, Mass., is president.

Chicago, Ill.—The General Container Corporation, Room 2027, Conway Building, has been organized with capital of 400 shares of stock, no par value, to manufacture and deal in paper boxes and other containers. The incorporators are Eugene C., Solomon A. and Bernard D. Heifetz.

Welding Handbook Reissued

A revised and enlarged edition of "Procedure Handbook of Arc Welding Design and Practice" is announecd by The Lincoln Electric Company, Cleveland, Ohio. The book has been reissued because of the demand which exhausted the original issue published last Fall. Orders for the books have been received from some 25 foreign countries as well as every state in the Union at the rate of more than a thousand a month.

The new volume is greatly enlarged and encyclopedic in scope and contents. It contains over 450 pages with several hundred illustrations. The eight principal sections deal with various phases of arc welding in a simple, concise manner, well illustrated with detailed drawings and photographs. Taken together, they cover practically every use and application of arc welding.

Among the many additional features which have been included in the new edition are the following: weld inspection (visual, stethoscopic, electro-magnetic, X-ray and Gamma ray); study of stress distribution by means of polarized light; a simplified method for the design of arc welded machinery; procedure and speeds for arc welding aluminum; technique and speeds for welding of copper; construction of welded water lines, etc.

Aside from the value of the book as a practical guide to anyone interested in welding, it serves as handy reference work for estimators. Complete welding speed tables and information make it a simple matter to estimate welding costs.

The book is designed especially for the use of designers, engineers, welding operators, welding foremen, and for engineers responsible for the design of products which may be redesigned for welding construction.

The eight sections of the book cover the following subjects:

Part 1—Welding Methods and Equipment; Part II—Technique of Welding; Part III—Welding Procedure, Speeds and Costs; Part IV—Structures and Properties of Weld Metal; Part V—Weldability of Metals; Part VI—Designing for Arc Welded Steel Construction of Machinery; Part VII—Design for Arc Welded Fabrication of Steel Structures; Part VIII—Typical Applications of Arc Welding in Manufacturing, Construction and Maintenance; Part IX—Advertising Section.

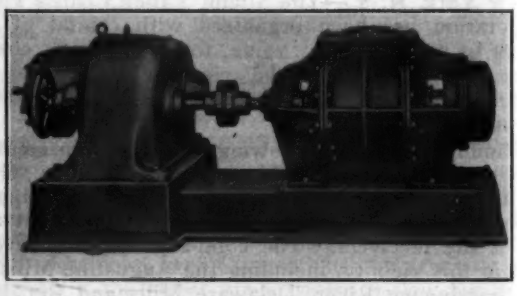
Among the subjects treated in detail are, descriptions of various welding processes, definition of welding trems, classification of welds, strength of welded joints, methods of stress relieving, tabulations of speed of welding all types of joints in all positions, methods for estimating cost of weld production, structures and properties of weld metal, specifications for steels and alloys of good weldability, the welding of non-ferrous metals, comparison of limitations of rolled steel and cast iron in machine design, construction details of basic machine parts built by welding, treatise on fundamental advantages of arc welded and riveted steel structures, details of structural arc welding, welding of automotive parts, construction and repair of bridges, use of arc welding in cement plants, gas plants, machine shops, mines, refineries, pipe lines, railroad shops, steel mills, shipyards and hundreds of other interesting subjects.

To make the book convenient for both desk and shop use, it has been made 5¾x9 inches and bound in semi-flexible stimulated leather embossed in gold. A comprehensive index has been included. Copies will be mailed postpaid in the United States by the publisher for $1.50 per copy. Foreign postage 50 cents extra.

Pumps With Variable Speed Drive

Roots-Connersville Blower Corporation, Connersville, Ind., is now supplying some of its blowers, vacuum pumps, and gas pumps connected through a variable speed drive to a constant speed motor. It is pointed out by the manufacturers that, where variations in the volume are required, a unit of this type offers many advantages in the process industries.

In the rotary positive type of machine, the power consumption varies in almost direct proportion to the volume and the pressure being delivered; thus the use of a variable



GAS PUMP CONNECTED THROUGH VARIABLE SPEED DRIVE TO CONSTANT SPEED MOTOR

speed arrangement permits this economy to be carried through the entire operating range. Savings of this kind, coupled with the convenience afforded by flexibility as to volume and pressure, account for the growing use of this type of drive.

Roots-Connersville equipment arranged in this way is especially suitable for those industries where seasonal peaks or processing technique makes changes in the volume advantageous or necessary. Applications of this sort are to be found in chemical plants, paper mills, ice plants, gas works, oil refineries, sugar mills, and many other processing plants.

Variable speed drives have also been used in connection with cycloidal rotary pumps, which are built for heavy duty service, including the handling of viscous liquids, or for producing vacuums up to 26-inch Hg, for handling vapor and liquid together.

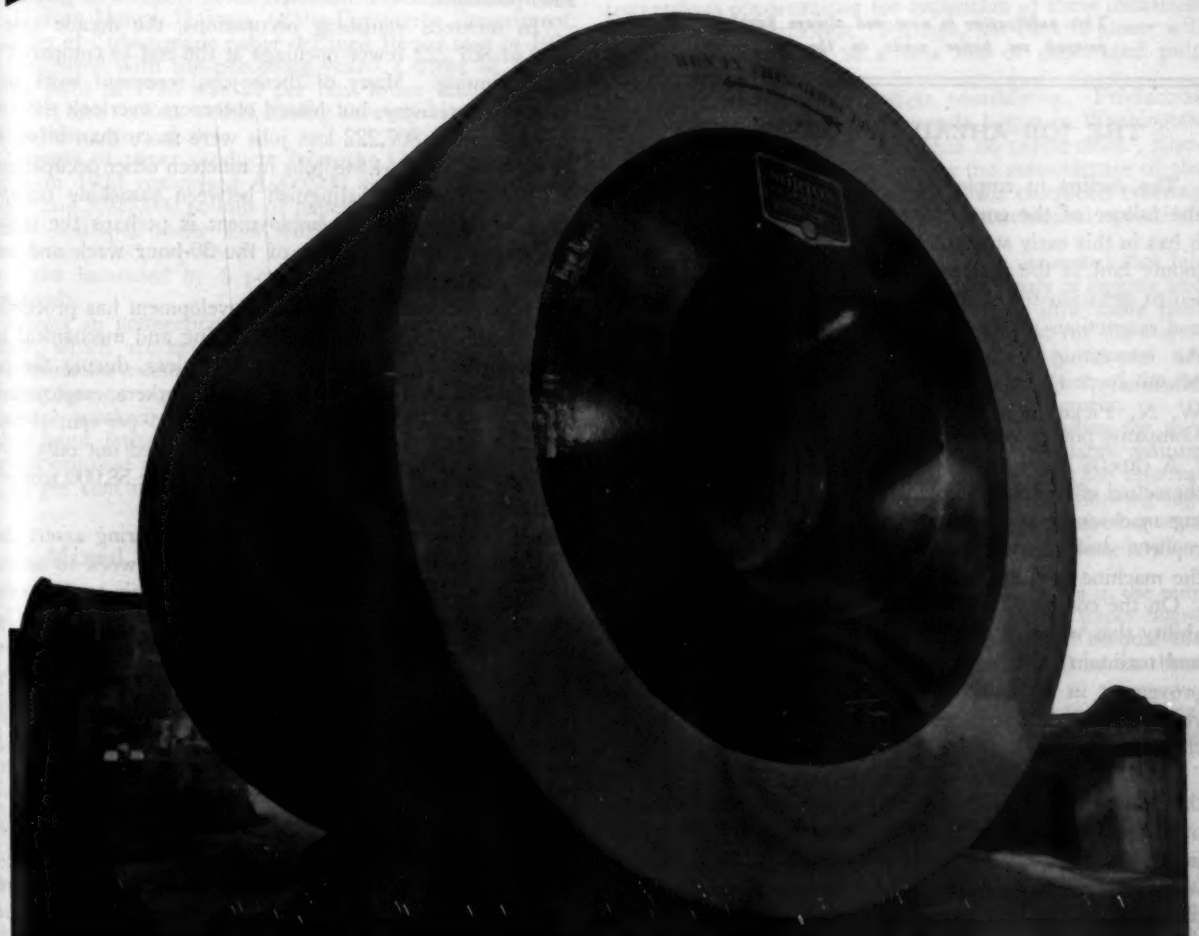
Delta Paper Boxes, Inc., New York, has been organized with capital of 100 shares of stock, no par value, to manufacture paper boxes and containers. The principal incorporators are Alfred Fink, 611 West 177th street, New York, and Louis W. Hall, 58-06 Seventy-first street, Maspeth, L. I.

Every wood pulp mill aims at continuous operation and uniform stock.

Some mills are using Norton Pulpstones exclusively to insure both continuity and the desired uniformity.

NORTON COMPANY
Worcester Mass.

NORTON
GRINDING WHEELS



NORTON PULPSTONES

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Ronald G. Macdonald
Editor Technical Section

Herbert J. Laughton
Associate Editor

Thomas J. Burke, C. A.
Editor Cost Section

Lynne M. Lamm
Washington Correspondent

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THE JOB AHEAD FOR MACHINERY

The decline in employment during the depression and the failure of the employment curve to rise further than it has in this early stage of the recovery movement is commonly laid to the increased use of machinery. This has led to agitation for shorter and still shorter working hours and restrictions on the installation of improved machinery. An interesting discussion entitled "The Job Ahead for Machinery," by Allen W. Rucker, in collaboration with W. N. Pickering, president of the Farrel-Birmingham Company, points to the fallacy of this reasoning.

A careful study of economic trends and an analysis of the actual effects on employment of thirty years of increasing machine productivity, based on United States census reports, show that there is no basis for the contention that the machine is reducing the number of jobs available.

On the contrary, it appears that there is a strong probability that we shall not be able to absorb the unemployed and maintain both the rate of social progress and the improvement in economic well-being during the next thirty years without greatly augmenting the use of efficient machinery.

Machinery has contributed liberally to advancement of the American standard of living by a widespread increase of individual productivity and earning capacity, by reducing arduous labor, by eliminating unpleasant and hazardous working conditions, by shortening the time required to "go places and do things."

The further job that it has ahead—the effective relief of unemployment and its important share in the continuance of social and economic progress—can only be accomplished by removal of the obstacles that are restricting the flow of long-term capital into productive facilities and preventing improvement of the nation's industrial plant.

Messrs. Rucker and Pickering point out that "It is probable that much of the confused thinking regarding the effect of the machine upon employment is traceable to shifts and changes in the *types* of available jobs.

"Thus, it is often too readily assumed that when the necessity for a certain kind of work or occupation vanishes, there is a definite loss of opportunity to work. When such changes take place in the presence of a parallel development of the machine, it is perhaps natural that many should imagine the two trends to be cause and effect. And thus conclude that the machine is causing permanent unemployment. For instance:

"Take the period between 1920 and 1930, for which detailed figures are available from census reports, employment shrank in nineteen occupations.

As compared to 1920, there were in 1930, 74,000 fewer blacksmiths and 10,021 fewer women tailors, to say nothing of 309,000 fewer draymen and teamsters and 12,319 fewer stablehands, including three women who in 1920 occupied such positions.

"In nineteen vanishing occupations, the decade saw a total of 807,222 fewer openings at the end as compared to the beginning. Many of these jobs represent work now done by machinery, but biased observers overlook the fact that the entire 807,222 lost jobs were more than offset by an increase of 2,264,548 jobs in nineteen other occupations.

"The failure to distinguish between vanishing occupations and permanent unemployment is perhaps the major shortcoming of proponents of the 30-hour week and machine licensing.

" It is probable that machine development has proceeded as fast or faster in the manufacturing and mechanical industries than in any other. Nevertheless, during the period 1900-30, the percentage of all workers employed in those industries increased from 27.9 to 28.9 per cent of total workers. That is, those industries absorbed not only their share of the gain in total workers, but some 58,000 workers in addition."

In conclusion, Messrs. Rucker and Pickering assert that "To discuss the advisability of a 30-hour week to absorb the currently unemployed without an analysis to determine the age, sex, and marital condition of those to be benefited is to compound ignorance with lack of vision.

"To impose artificial limitations upon the installation of improved machinery is to condemn to toil the very classes who it is most desirable should not work . . . and to compel continued unemployment among the capital goods producers and service workers who should work.

"With manufacturing industries alone employing in normal times 1.5 millions who should not work, and possibly even in the present depressed times one-half that number, this is no time to halt progress in machine development.

"With all business still normally employing some 6 to 7 million minors, mothers and aged men and women, this is no time to forge new legislative chains with which to enslave the relatively helpless.

"With business normally employing 97 per cent of adult men between the ages of 25 and 45, and 94 per cent of those between 46 and 65, this is no time to impose artificial restraint upon either the hours of labor or the use of machinry.

"With the bulk of unemployment in the capital goods industries, this is no time to use shorter hours and higher wages as a means of reducing the funds of consumable goods indstries so that those industries cannot buy the output of capital goods workers.

"But this *is* the time to remove the obstacles that prevent the flow of long-term capital into productive facilities—and to encourage the improvement of the national industrial plant that it may meet both economic and social demands.

"That is the job ahead for machinery; the sooner it is permitted to attack that job, the better for the nation."

U. S. Paper Products Stronger in Cuba

American paper exporters strengthened their already predominant position in the Cuban market during 1933, according to a report from Assistant Trade Commissioner A. Horton Henry, Habana, to the Commerce Department.

Sales of Cuban-made paper declined 10 per cent in 1933 as compared with the preceding year. Output of Cuban paper mills in 1933 was 20 per cent lower than the level of 1932, two serious strikes having severely curtailed operations, the report shows.

Imports of paper products from the United States into Cuba in 1932 comprised 4,000,000 pounds of wrapping paper and 5,923,000 pounds of paper bags. Official United States statistics show that during the period January-November, 1933, exports of wrapping paper and paper bags to Cuba increased by 6 per cent and 169 per cent, respectively.

Except in connection with pulp, glassine and cigarette paper, which are still supplied almost exclusively by the Scandinavian countries, German, Spanish and European competition during the last six months in the Cuban paper business weakened markedly, it is pointed out. On the other hand Japan increased its share of imports of transparent cellulose sheeting into Cuba from 3 per cent in 1932 to 11 per cent in 1933.

Mixed Dealers to Form Association

A statement issued by Charles M. Haskins, managing director of the National Association of Waste Material Dealers, Inc., is to the effect that mixed dealers all over the United States are very much in favor of an organization specifically devoted to handling the mixed dealers' problems and since the board of directors of the above-mentioned association has authorized and provided for the formation of such an association to be affiliated with the National Association of Waste Material Dealers, Inc., applications for such membership have been coming in large numbers. The above association has pledged to the mixed dealers its fullest cooperation not only for a separate divisional organization for the mixed dealer but also for a separate code if and when the mixed dealer believes that his interests can best be protected by having a code of his own. This would be a matter that would naturally find its way to the NRA Administration through action taken by the Waste Trade Committee upon request of the mixed dealer organization.

Low-Cost Electric Power to Help Paper

[FROM OUR REGULAR CORRESPONDENT]

SEATTLE, Wash., April 2, 1934—Low-cost electric power which is expected to be developed by building the projected Bonneville dam on the Columbia river is expected directly to benefit paper and pulp industries of the Pacific Northwest. The extensive natural resources necessary in the production of pulp and paper and the other cellulose products, such as rayon gives these industries first ranking in consideration of possible advantages forthcoming from construction of the huge electric plant.

Although one-half of the nation's spruce reserves are located in Oregon and Washington, one-fourth of the nation's pine reserves are found over the two states, an abundance of water and the principal chemicals used in the manufacture of cellulose products are being produced —or can be manufactured on the Pacific coast, it is a fact that the West coast turns out only a fraction of the nation's paper and pulp requirements. Figures show that Washington produces only 8 per cent of America's wood pulp needs while 5 per cent is manufactured in the states of Oregon and California. Washington produces only 3 per cent of the nation's paper requirements, while California and Oregon are credited with an output totalling 3.7 per cent of the country's paper. It can readily be seen that there are tremendous opportunities for expansion of these industries in the Pacific Northwest. Perhaps, low-electric power will prove the touchstone to a new era of paper and pulp prosperity.

Manufacture of rayon offers possibilities. Production of pulp for rayon has only recently begun in Washington at a plant at Shelton. Oregon has no rayon mills. Electric power is an important item in the manufacture of the pulp material, in the production of the chemicals entering into the various processes and in the mechanical operations essential to the fabrication.

The United States forest service has estimated that billions of cubic feet of wood are wasted yearly in logging and sawmill operations in America. Only a little more than half of the log entering the sawmill is used for the manufactured product. Hope is seen in the Northwest for the utilization of this waste through integration of the industries and the coming of low-cost electric power.

Washington is generally pointed out as leading the way in the United States by the grouping of plants making varied wood products in a single location and the removal of pulp wood from the forests immediately following logging operations. Washington is the largest lumbering state with Oregon a close second so that the potential developments in this field are of major consequence.

As lumber mill waste gains commercial value in the pulp mills and as pulp mill rejects are applied to paper board and cheap wrapping paper, wood waste will become too valuable to burn at the lumber or paper mill as has been the practice of the past.

Completion of Bonneville dam may prove the "electrical stimulant" necessary in utilizing and salvaging the pulp waste for production of commercial by-products.

Netherlands Paper Industry Busy

WASHINGTON, D. C., April 9, 1934—Paper machines in the Netherlands during 1933 were kept fairly busy but sales were unremunerative in face of competition from foreign countries with depreciated currencies, according to a recent report from Commercial Attache Jesse F. Van Wickel, The Hague. Domestic manufacturers secured a larger share of the home market during last year, imports declining 2 per cent.

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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

The Use of White Water on Board Machines*

By F. C. Stamm[1]

Abstract

The advantages and disadvantages of reusing white water in paper board mills is presented from the practical standpoint. The savings in stock may be counterbalanced by operating losses directly related to the white water reuse.

The matter of using white water on board machines has been a subject of some controversy for the last five or six years and so far, I do not believe it has been definitely proven that white water is of value to the average board mill. Much has been written concerning the benefits which come from the use of white water, but we find very little regarding the disadvantages. This is probably due to the fact that most people who might have strong convictions against the use of white water cannot be persuaded to write their opinions for the benefit of the industry as a whole. Personally, I have been interested in the use of white water for some time. In fact, about two years ago, I was very enthusiastic in my opinion that white water should be used wherever possible in the Mill. However, my enthusiasm has gradually lowered until at present, I am pretty much in doubt as to whether or not the advantages outweigh the disadvantages. Some time ago the Technical Association of the Pulp and Paper Industry sent out a questionnaire which was covered in Special Report No. 190 and the number of answers which were received from this questionnaire certainly did not help to clear up the matter at all. It is surprising how many different opinions can possibly exist on a subject.

The main object of this paper is to set forth as briefly as possible the advantages and disadvantages as I see them at the present time and then bring out as much discussion and practical suggestions as we have time for.

In order to simplify the subject, I will first outline the advantages which are derived from the use of white water.

Advantages Through the Use of White Water

The first advantage derived from the use of white water is the saving of stock. The rough figures which I have collected would indicate that in the average 100-ton board mill, it is possible to pick up approximately 3,500 pounds of stock per day and this based on $15.00 per ton and 300 days per year would amount to a saving of approximately $8,000 per year; against this saving of course must be charged the fixed charges and interest on the investment, chlorine and chlorine equipment and the labor for repairs and maintenance. However, I personally believe that all of these items would not lessen the gross savings of $8,000 perceptibly.

The next saving occurring through the use of white water would be in alum. I would figure roughly a saving of approximately 1,200 pounds of alum per day which would amount to approximately $5,000 per year in the average 100-ton board mill. This then brings our total savings up to $13,000 per year.

The next item would be the question of temperature in the vats. The average board mill operating on fresh water will run a temperature of approximately 52 degrees in the vats in the winter time and this low temperature slows up the stock considerably which reflects in poor operating conditions. With the use of white water, the temperature in the vat will range from 95 to 115 degrees with a subsequent freeing up of the stock, and it is safe to figure at least five to seven tons additional production under these more advantageous conditions. Five tons a day at a conversion cost of say $12 a ton would amount to $60 per day and this in a winter period of 100 days would amount to $6,000 per year. This now brings our total savings up to approximately $18,000 and with a saving as large as this, we could easily justify an expenditure of $60,000 to $70,000 in order to obtain the savings and benefits from the use of white water. Mind you, these figures are all approximate and are merely stated to give us some idea of the financial advantages which occur from the use of white water in a board mill. I daresay there are very few mills who would sanction an expenditure of $60,000 on a white water system and furthermore a very elaborate system could be installed for $15,000 or $20,000. The main point I want to bring out is that if these savings are true, there should be no question whatever but what the average board mill should use every drop of white water possible.

The fourth advantage to be considered is the question of stream pollution which although not showing a direct saving to the individual mill, will certainly in the future show a direct benefit to any community as a whole. There is no question at all but what we should work definitely along the line of eliminating the waste products which continually leave the average paper mill and are dumped into the river.

Now that we have considered the advantages from the

RECEIVED February 9, 1934.

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[1] Member TAPPI, general superintendent, The Upson Company, Lockport, N. Y.

use of white water and find that it is an investment which no mill can afford to overlook, let us look at the disadvantages which might occur from the use of white water.

Disadvantages from the Use of White Water

First of all, is the question of machine operation. I believe it is safe to say that the average mill running heavy size sheets will have quite a little trouble if they close up the system and use white water entirely on the machine. The amount of lost time and lost production due to the annoyance from foam is almost impossible to estimate and the losses from trouble of this type could very easily offset the additional production which we might find from the increase of temperature in the vats. It may even be so troublesome as to entirely prohibit the use of white water on the machine. The use of kerosene or other types of foam-killer will in turn damage the sizing with the result that the paper leaving the dry end of the machine is considerably below the quality standard.

Next, is the matter of cylinder wires plugging up due to the use of white water. TAPPI Special Report No. 190 shows that this trouble was rather common in some mills, while other mills had no trouble with it at all. It might be that the mills having the trouble were not handling their white water properly while on the other hand, the trouble might have developed from the particular type of stock and the amount of size which was being used. This trouble is annoying. It tends to lower the quality of the product due to the fact that a cylinder which is slightly plugged up will give no end of trouble on the machine and the actual cost in dollars and cents due to this trouble is very hard to estimate.

Another trouble which develops through the use of white water is the matter of slime formation which will give dirty paper and also trouble in formation on the cylinders. Slime trouble, we all agree, can be easily cured through the use of chlorine but remember when using expensive chlorine equipment together with the cost of maintenance and cost of chlorine that you are continually deducting from the net savings which you realize from the use of white water. Thus, you can see that the savings which you might realize from stock, alum and temperature in the vats; can easily be offset due to foam troubles, cylinders plugging up, and the slime formation in the vat.

Hydration of Stocks in Alkaline or Acid Condition

The question of acidity in the beaters due to the use of white water and its effect on the hydration of stock has never been discussed to any great extent but I believe that there is a definite disadvantage in certain mills that try to carefully hydrate their stock, when the beater is run at a pH of 5.5. Personally, I am no chemist and my own practical experience is limited on this subject, but I have talked to many people and have read quite a few articles and thus have been led to believe that a beater with a pH of approximately 7 will hydrate this stock much better and much faster than if it were operating under a condition of say 5 to 5.5. If this fact is true, we find one more disadvantage to the use of white water, and just how far-reaching this disadvantage is, might be a question of some controversy. However, it certainly must be taken into consideration in any mill that is endeavoring to highly hydrate their stock.

The Effect of White Water on Sizing

Another question which is often overlooked and probably very seldom really understood is the question of white water effecting the sizing of a sheet of paper. From all that I have been able to gather on the subject, it is practically impossible to hold a high degree of sizing in a sheet of paper when white water is used in the beaters. I would certainly be very glad to have any amount of discussion on this subject since I too personally believe that the use of white water in beaters is definitely detrimental to a consistent control of sizing. There is no question at all but that the alum in white water affects the size when it is added to the beaters, but it does not set in as effectively as the addition of fresh alum after the size has been thoroughly dispersed among the fibers. Furthermore, with the pH of the white water continually varying, the effect of this white water on the size in the beaters will continue to vary and this in turn will make it almost impossible to hold and control sizing at a definite predetermined point. I really believe that much of the trouble which various mills experience in the matter of controlling size can be traced more or less directly to the variations in white water as it returns to the beaters. I know that some mills find it advantageous to neutralize their beaters to a pH of 7 before the sizing is added and find that the increase in sizing and better control of sizing more than offsets the cost of chemicals for neutralizing the beaters. If this fact is true, certainly the savings due to white water in the beater is a mistaken disadvantage.

Conclusion

I have tried, in the above statements, to bring out fairly the advantages and disadvantages as I see them. On the one hand, we have some definite savings which amount to say $20,000 a year. On the other hand, you have troubles in operation, troubles in sizing and troubles in the hydration of stock, all of which could easily more than offset the saving of $20,000 per year.

The saving of $20,000 per year is a tangible, concrete saving. The troubles due to operation and influences which vary the quality of the sheet are very intangible and for that reason, are very hard to evaluate. For that same reason also, they are generally overlooked in the average mill that becomes enthusiastically inclined toward the use of white water. I frankly believe a good, serious discussion of the whole subject bringing out, as I have said before, the disadvantages as well as the advantages, would be of value to the industry as a whole.

Container Committee Annual Report

The Container Committee was formed in 1933 and has been devoting its attention to the preparation of specifications for both corrugated and solid fiber shipping containers; including tests and tolerances. These specifications will eventually be incorporated in the TAPPI Manual of Standards.

Of the tests to which container material may be subjected it is the opinion of the committee that the following testing methods appearing in the Manual of Standards will be adaptable to container board testing: Sampling T 400 m; fiber analysis T 401 m; tensile strength T 404 m; basis weight T 410 m; caliper T 411 m; moisture T 412 m; ash T 413 m; and tearing T 414 m.

The following procedures have been submitted to the TAPPI Standards Committee for consideration as tentative standards: conditioning, bursting strength and vapor transmission through board.

Plans for the current year include the development of a method for determining degree of sizing and the measurement of the tearing strength of cloth tape.

The committee consists at present of H. C. Koch of the Auglaize Boxboard Company, St. Marys, Ohio; J. D. Malcolmson of the Robert Gair Company, New York, N. Y.; and the chairman, Drewsen.

Pierre Drewsen, Chairman,
Hinde & Dauch Paper Co., Sandusky, Ohio.

A New Electric Finish, Formation and Plano-Radial Porosity Tester*

By Frank M. Williams[1]

Abstract

A description of a new instrument for measuring paper porosity. Existing ways of making this measurement are outlined and their respective advantages and shortenings are indicated. The measurements made with the new instrument are claimed to indicate the finish and formation, as well as the porosity of the paper sample tested.

In the survey covering the most important characteristics of paper as outlined at the Appleton convention of the Technical Association of the Pulp and Paper Industry in September finsh was rated first and if my recollection serves me correctly, formation was fourth in order of importance.

Considerable work has already been done upon the matter of finish. Several types of instruments have been developed which may be briefly enumerated as depending upon the following principles:—

1. Determination of finish by measurement of gloss or glare as indicated by the intensity of a beam of reflected light. Gloss or polish is not necessarily an indication of smoothness. A coat of varnish applied to the rough paint of an old automobile would give a glossy surface, but would be far from a smooth finish. Dull finished papers may have a better finish, in the vernacular of the paper maker, than a highly polished surface which might be quite irregular. Further, colors affect the determination depending upon gloss measurement and the personal equation, including variations of individual eyesight, render this method still more inconsistent in results.

2. Instruments for determination of finish depending upon friction. Instruments of this type are open to the objection that the coefficient of friction between two surfaces is dependent upon the nature of the contacting surfaces, as well as upon the degree of smoothness of these surfaces and in the case of paper to paper, some surfaces of practically the same degree of smoothness or finish, will have different friction constants depending upon nature and treatment, sizing, latex, and the presence of clay or other anti-frictional filler.

Further, we have found in the friction type of testers that there is a comparatively narrow range or spread between papers of widely different smoothness.

3. In one instrument, the smoothness of paper is determined by measuring the time in seconds required for a given amount of air to be drawn in under vacuum between the surface of the sample of paper and a rigid polished surface against which the paper sample is held at definite pressure with the other surface sealed against the passage of aim.

4. In the method described in this paper, in which the Willams apparatus is recommended the finish or smoothness of paper is determined by noting the time in seconds required to force a definite quantity of air under a definite pressure out between the two inside surfaces of a folded sample of paper or between two surfaces of paper held in contact at a definite hydraulic pressure, between special soft rubber-faced clamps which effectively prevent the escape of air from between the two outside surfaces which are not under test.

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[1] Member TAPPI, president, Williams Apparatus Company, Watertown, N. Y.

Description of Instrument

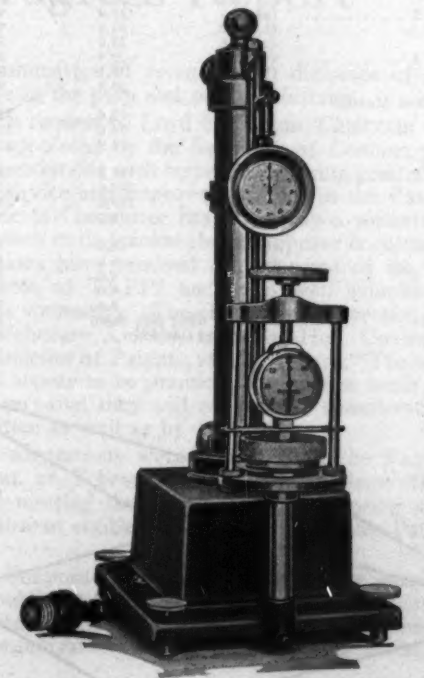
A uniform air supply is provided by means of a definitely weighted cylinder, closed at the upper end but open at the bottom which is allowed to fall a definite distance into a mercury reservoir which acts as a seal to the lower end of the compression column.

The end point of the test is accurately and automatically determined by means of a plunger rod attached to the falling cylinder which makes an electrical contact, closing the circuit of an electro magnet which is connected through a spring and pull rod to a stop watch.

Uniform clamping pressure is secured by a screw clamp with diaphragm hydraulic press foot and the exact pressure is accurately indicated upon gauge.

Holes or perforations in the center of the folded sample or of the sheets, in case two separate samples are clamped together, allow free access of air to the space between the two surfaces which are under test. The rougher the paper, the shorter the time required to force a definite quantity of air out between the contracting surfaces.

You will note that by this method the sample itself furnishes both reference surfaces and eliminates the difficulty



Williams Electric Finish, Formation and Plano-Radial Porosity Tester.

of obtaining and maintaining a polished rigid surface, of uncertain smoothness. The accuracy of the test is doubled by having two surfaces of paper in contact, rather than a single surface pressed against a polished rigid surface.

Method of Operation

The operation may be briefly outlined as follows:

The central column providing the compressed air supply is raised and latched, the stop-watch set at zero.

The sample to be tested is folded upon itself and placed in the rubber-faced clamp and by means of the hand wheel, the pressure brought up to a standard as indicated upon the gauge dial, the perforated side being placed in connection with the air supply.

The next single operation by pressing a lever unlatches or releases the air compression column and at the same time starts the watch.

When the required amount of air has been forced out between the two surfaces of the sample under test, an electric contact is formed which actuates the electro magnet, automatically stops the watch and gives both an audible, and a visual signal, by lighting a lamp, that the test is completed.

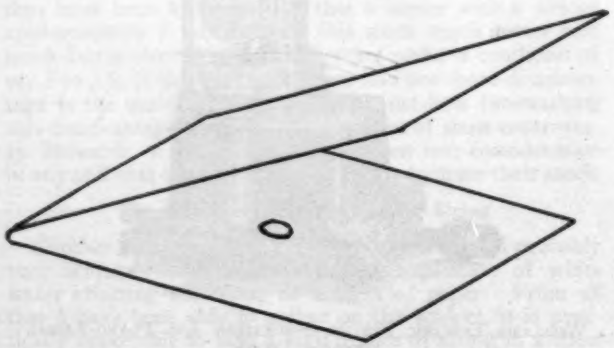
It is not necessary to give any attention to the test during its operation. When it is completed, merely read the stop-watch which gives an exact indication in seconds of the smoothness of the paper.

To determine the finish on the opposite side of the paper, merely reverse the fold in the sample, clamp in instrument as before, and repeat test.

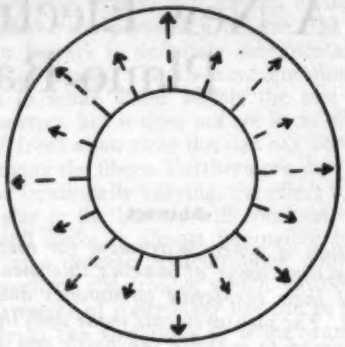
Close checks on the same sample of various grades and types of paper are obtained as indicated by the tests in Table I.

TABLE I

			Plano-Radial Porosity
Newsprint	Wire Side	Felt Side	
Sample 1	(a) 18.1 seconds	26.0 seconds	71.0 seconds
	(b) 18.4	26.0	72.0
	(c) 18.4	25.8	71.1
Sample 2	(a) 29.9	33.2	92.0
	(b) 30.0	33.2	92.4
	(c) 30.8	33.0	93.0
Sample 3	(a) 28.0	29.4	97.8
	(b) 28.0	30.1	93.8
	(c) 28.8	28.4	96.8
Water Finished Manila			
Sample 1	(a) 72.8	72.0	321.0
	(b) 73.8	74.0	320.0
	(c) 72.0	74.9	328.0
Coated Book			
Sample 1	(a) 171.0	184.0	289.0
	(b) 174.0	190.0	274.0
	(c) 177.0	189.0	280.0
Sample 1	(a) 5.0	6.0	17.0
Kraft			
	(b) 5.0	6.0	17.0
	(c) 5.2	5.8	16.0
Sample 2	(a) 3.0	4.0	14.0
	(b) 3.0	4.0	13.0
	(c) 3.0	4.0	14.0
Filled Board	Porosity, filled side down		12.0
	liner side down		97.0



Folded Sample.



Schematic Illustration of Flow of Air Through Intracellular Structure of Sample, Plano-Radial Porosity.

Formation, Porosity and Density

Normal Porosity: All are familiar with the well-known methods of testing porosity of paper by forcing air through a sample of paper in a direction normal or perpendicular to the plane of the sample. In this class of instruments might be mentioned the Gurley and Emanueli testers.

In tests of this type, discordant results often come from defects or irregularities in the sample, such as pin holes, thin spots, etc., and further, comparatively little effort has been made to reduce the results of these tests to a standard thickness or unit caliper, thereby giving what might be termed a standard porosity factor. These objections, we believe have been overcome in the Williams instrument, and through research we have developed a new porosity test which we have called plano-radial porosity in distinction to normal porosity as described above.

Plano-Radial Porosity: This may be described as the time required to force a definite quantity of air under standard pressure conditions, a fixed distance through the actual pores or texture of the sample in the same plane as that of the sample. This is effected as follows in the Williams finish testing instrument, above described. After the finish of both sides of a sample paper has been determined, a perforated piece of rubber is inserted between the folded surfaces of the sample and the clamping pressure brought up to standard conditions.

A measured quantity of air at a definite pressure is now forced out through the pores or fiber of the sample in the same plane as the sample to a distance equal to ½ inch. The exact clamping area is represented by an annular ring supporting rubber facing and having an outside diameter of 2 inches with a central hole of 1 inch diameter.

It is already noted that both the upper and lower and inside surfaces of the sample under test are effectively sealed against the passage of air, by specially prepared soft rubber facings so that the only means of escape of the air under compression is actually through the pores or texture of the sample.

This method of measuring the porosity, density or formation of a sheet of paper offers the following advantages of so-called normal porosity test. It gives a fairer average of the arrangement of the fiber, filling, etc.

Local defects in sample, such as pin holes, thin spots, etc., do not seriously affect the results.

Actual mill tests show that the addition of fine stock to the beaters, or longer beating or increased jordan pressure tending to improve formation and density, are readily indicated and measured.

This porosity tester is adaptable to all kinds of paper

from tissue to board and by means of it, a standard porosity factor may be obtained by reducing the plano-radial porosity readings to terms of unit thickness or caliper. The advantages of this standard factor will be seen when it is noted that a thick sample of paper or sample of board offers a greater cross-sectional area to the passage of air than a thin sheet and therefore will give lower readings on stock of the same density or porosity than upon thin sheets. Hence the desirability, where extreme accuracy is required, of reducing porosity tests to unit caliper. Furthermore, the radial porosity tests taken in connection with the finish or smoothness of surface tests, makes it possible to determine the absolute surface finish.

In routine tests upon the same type of paper, this refinement is possibly unnecessary but where extreme accuracy of finish is required, it is desirable to correct the apparent finish readings by the determined amount of air which passed out through the cellular structure of the sheet in addition to that which passed between the two contacting surfaces on sample. This is easily made possible as follows:

For example, the apparent finish as determined by forcing air between the two surfaces of the sample as above described, includes some air which was forced out between pores of the paper plano-radially. The amount of this air so forced out, is readily determined as above described and the readings of the apparent surface finish increased by the amount of time which would be required had all of the air passed between the two surfaces of paper under test.

Advantages Cited

The following are a few of the advantages of this apparatus:

(1) The same piece of apparatus is capable of carrying out either a finish or a porosity test, the nature of the test depending merely upon the placing of the sample between the clamping plates.

(2) The device does not require a skilled operator.

(3) The personal factor is entirely eliminated.

(4) Results can be readily duplicated and different pieces of apparatus can be readily standardized to give the same result on the same test sample as all of the controlling constants of construction are capable of exact weight and measurement.

(5) In the construction of this instrument, all fragile and easily breakable parts are eliminated. There are no glass manometer tubes with the attendant difficulty of maintaining air-tight joints.

(6) A minimum amount of attention is required during the test, for once the test is started it proceeds to completion without further attention, the device automatically registering the result and calling the attention of the operator to the fact that the test has been completed.

In conclusion, it is hardly necessary to dwell upon the importance of an accurate method of measuring surface finish of papers and enabling both the paper manufacturer and the printer to speak the same language.

A large number of tests made upon this instrument show closely agreeing readings upon the same sample. They also indicate and measure those improvements in finish which are to be expected, such as come from better closing of the sheet and additional calendering.

The plano-radial porosity or density test, we believe, marks the opening of a new concept to the paper maker in readily giving information as to the actual formation and density of the sheet which he is making. Both the finish and the formation tests give him definite numerical data which is of great assistance to him in duplicating a former run of paper or in matching a sample which may be submitted to him.

Patents Committee Progress Report*

Since the last annual meeting of the Technical Association the following bulletins have been published under the auspices of the Patents Committee:

Bulletin 17 "Scope of a Patent" published in the PAPER TRADE JOURNAL of March 9, 1933, Page 31.

Bulletin 18 "Confidential Disclosure of an Invention" published in the PAPER TRADE JOURNAL of March 16, 1933, Page 31.

Bulletin 19 "What Constitutes Invention" published in the PAPER TRADE JOURNAL of April 13, 1933, Page 35.

Bulletin 20 "Process Engineers v. Container Corp." published in the PAPER TRADE JOURNAL of June 1, 1933, Page 39.

Bulletin 21 "Cautions as to Statements in Technical Literature" published in the PAPER TRADE JOURNAL of August 3, 1933, Page 29.

Bulletin 22 "The 'New Deal' and the Patent Office" published in the PAPER TRADE JOURNAL of November 2, 1933, Page 35.

Bulletin 23 "The Masonite-Celotex Patent Appeal Decision" published in the PAPER TRADE JOURNAL of November 9, 1933, Page 39.

In these bulletins the Committee has continued its policy of rendering available to members of the association important information relating to patent protection. Four of these bulletins (Bulletins 18, 19, 20 and 23) present brief summaries of recent patent decisions of interest to workers in the pulp and paper industries.

At the request of Loyd H. Sutton, Chairman of a Committee appointed by the Secretary of Commerce to make recommendations with respect to securing greater efficiency, better service and improved practice in the Patent Office, the Patents Committee has drawn up a series of suggestions which in its opinion should improve conditions. These suggestions have received the approval of the Executive Committee of TAPPI and have been submitted to Mr. Sutton's committee. The chairman is in receipt of a letter dated February 3, 1934, from the Hon. Conway P. Coe, Commissioner of Patents, stating in part: "The suggestions offered appear to be practical and possess merit and I can assure you that they will receive full consideration by the Committee as well as by myself."

The suggestions were published in the PAPER TRADE JOURNAL of February 15, 1934 as Bulletin 24. At the present meeting the Committee is sponsoring a paper by its Chairman entitled "Creating a Favorable Patent Situation".

The Committee during the present year intends to continue publishing bulletins of patent information and current patent decisions and to cooperate with committees of other organizations in securing improvements in the patent system.

C. W. RIVISE, Chairman,
Philadelphia, Pa.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., February 19 to 22, 1934.

A Comparison of Several Methods for Processing Pulp Test Samples*

H. W. Morgan[1]

Abstract

This paper is presented to compare the action of several milling equipments which have been proposed for strength testing of pulp to overcome the inherent difficulties encountered in the pebble mill. There are several variables of operation which require further study and this paper is in the nature of a progress report pointing to the more desirable equipments which should be the subject of more complete investigations. Typical comparative results will be given and discussed in the light of the deficiencies of the pebble mill.

The pebble mill using a porcelain jar and flint pebbles has probably found a wider use than any other equipment for the strength testing of wood pulp. This equipment has disadvantages, some of which have been overcome, at the expense introducing others, by varying the charge of pulp, water, and pebbles. However, in so far as the author is aware, no combination of variables has been found which obviates all the disadvantages. For example, the amount of ash in the milled pulp may be reduced by decreasing the size of the pebbles used but when this is done the milling time required to reach maximum strength is greatly lengthened.

The most common criticism of the present apparatus is of the ash in the milled pulp resulting from wear of both the jar and the pebbles. The presence of this ash lowers the strength result obtained and because of the variation in rate of wear from one mill to another causes a variation in results from mills otherwise identical. The presence of ash probably has an effect on the rate of fibrillation and swelling of the pulp which varies according to the amount of ash present. The presence of ash also introduces another variable, in that the retention of the pulverized jar and pebble material in the pulp sheet varies with different pulps.

Another undesirable feature of the pebble mill equipment is the time required for the complete strength development of a pulp. To obtain information of value, it is not only necessary to mill the pulp until the strength reaches a maximum value but it is also necessary to have the strength values at several milling times so that the development curves may be drawn. The time and labor required to determine this data often prohibits the use of this test. Several laboratories have used a procedure which calls for the use of only one pulp charge and for the removal of a portion of this charge at the several intervals of milling. This procedure introduces several new difficulties which have prevented its general adoption.

In the past, no careful provision has been made for obtaining pebbles of a uniform shape and hardness or jar linings of uniform quality. Variations in these factors have made it difficult to duplicate test results with different mills and in different laboratories. Some laboratories have found it desirable to regularly standardize their pebble mills against a master mill and apply a correction factor for each mill, or change the mill charge slightly to compensate for the variation. The non-uniformity of jars and pebbles probably account for much of the difficulty in obtaining check results with different mills and in different laboratories.

The pebble mill has often been criticized because the development curves obtained cannot be correlated to, and often show little similarity to, those obtained in the commercial beater. While this would be a very desirable condition, it seems doubtful if it will ever be obtained with laboratory milling equipment. About the best we can hope for is an equipment which will measure the relative magnitude and rate of development of fibrillation and swelling. The commercial beater in addition to causing these two changes also gives considerable cutting of the fibers and thus clouds the effect of the first two. The laboratory beater probably holds the most hope of giving a measurement or duplication of the action in the mill beater.

TABLE I.

Equipment	Mfr.	Jar Size I.D.* Inches	Jar Material	Milling Elements Type	Size	No.	Charge Weight Pounds	Charge Water cc.	Charge Pulp Grams
Pebble mill	Abbe, Eng.	10 x 13¼	Porcelain	Flint pebbles		75	9.1	2000	90 B.D.
Porcelain ball mill	Abbe, Eng.	10 x 13¼	Porcelain	Porcelain balls	1.25D	90	9.1	2000	90 B.D.
Metal ball mill	Abbe, Eng.	10 x 15	Bronze	Duriron balls	1.25D	103	27.5	2000	90 B.D.
Metal rod mill	Abbe, Eng.	10 x 15	Bronze	Stainless steel	14 x 1 $\frac{1}{4}$ inches	15	46.2	2000	90 B.D.
Rubber rod mill	Abbe, Eng.	10 x 15	Bronze	Rubber covered rods	14 x 1 $\frac{1}{4}$ inches	29	69.6	1500	90 B.D.

*—Inside dimensions.

Equipments and Procedures

The bronze jar was equipped with two removable lifts bolted on opposite sides of the inner wall of jar. The lifts were made by cutting a 1 inch diameter bronze rod in two along the long axis. These lifts were used with both metal balls and metal rods. Runs were also made using metal balls in the bronze jar without lifts. No runs were made with the metal rods in which lifts were not used.

The cast duriron balls used were polished before use by running for several hours in a mixture of oil and emery powder. When the lifts were used in conjunction with the duriron balls, the balls were too brittle to stand the shock and several broke. Bronze or stainless steel would be a much better material to use for the metal balls. The porcelain balls used were supplied by the Coors Porcelain Company and were of a uniform hardness of 2.315. The rubber covered rods, supplied through the courtesy of the Ameri-

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[1] Member TAPPI, instructor, New York State College of Forestry, Syracuse, N. Y.

TABLE II

Freeness, Green—CC.

Milling time in minutes		0	10	20	30	40	60	80
Pebble mill	a.	680	500	580	..	350	260	170
	b.	..	530	570	..	365	250	150
	Average	680	515	575	..	360	255	165
Metal ball mill—no lifts		..	..	640	..	570	430	400
Metal ball mill—2 lifts		..	..	..	..	520	345	270
Metal rod mills—2 lifts		..	560	455	..	260	145	..
Rubber rod mill	a.	..	610	490	380	..	..	..
	b.	..	550	420	340	..	..	..
	c.	..	580	460	375	..	..	..
	Average	..	580	460	365	..	..	..

TABLE III

Bursting Strength—Percent Points (25x40-500)

Milling time in minutes		0	10	20	30	40	60	80
Pebble mill	a.	25	62	66	..	99	91	87
	b.	..	59	82	..	99	97	95
	Average	25	60	74	..	99	94	91
Porcelain and ball mill		..	..	71	..	94	98	..
Metal ball mill—no lifts		..	..	69	..	79	87	94
Metal ball mill—2 lifts		..	..	..	..	68	71	100
Metal rod mill—2 lifts		..	77	99	..	121	116	..
Rubber rod mill	a.	..	89	116	128	..	..	..
	b.	..	87	118	128	..	..	..
	c.	..	91	113	135	..	..	..
	Average	..	89	116	130	..	..	..

TABLE IV

Tearing Strength—Percent Point (25x40-500)

Milling time in minutes		0	10	20	30	40	50	80
Pebble mill	a.	192	223	179	..	146	185	162
	b.	..	212	171	..	154	167	160
	Average	192	216	175	..	150	176	161
Porcelain ball mill		..	..	217	..	191	156	170
Metal ball mill—no lifts		..	..	180	..	135	111	129
Metal ball mill—2 lifts		..	..	..	..	168	152	123
Metal rod mill—2 lifts		..	150	140	..	112	127	..
Rubber rod mill	a.	..	151	122	129	..	..	..
	b.	..	145	123	122	..	..	..
	c.	..	175	160	152	..	..	..
	Average	..	157	135	134	..	..	..

can Wringer Company, were steel rods 13⅞ x 13/16 inches covered with rubber to 14 x 1-3/32 inches. The rubber used was very hard and though the density was not measured was estimated to be about 4. There was no appreciable wear of rubber from the side of the rods but a great deal of difficulty was encountered with rubber chipping from the ends of the rod. The manufacturer is now preparing rods of a new design and covered with a somewhat softer rubber which it is felt will not chip. With the new rubber composition it is possible to apply a coating of a specified hardness which is practically unaffected by age or exposure to air, and it would be possible to duplicate very closely the properties of the rods used at any time.

The pulp and water charges used with porcelain pebble mill were approximately those found to be most satisfactory

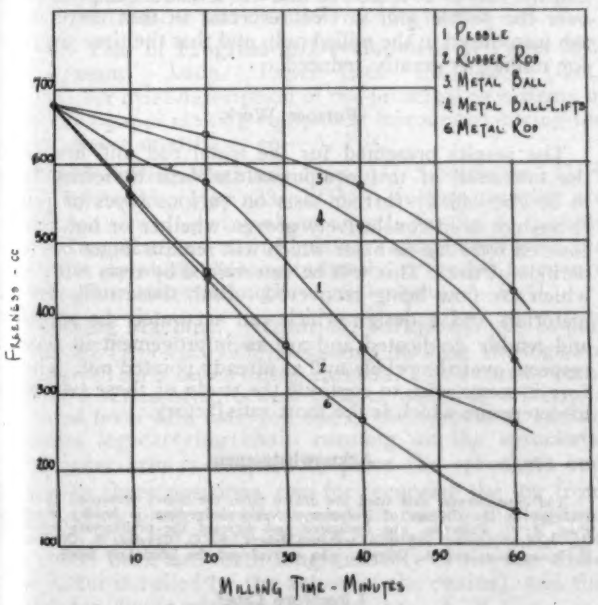

FIG. 1

Freeness.

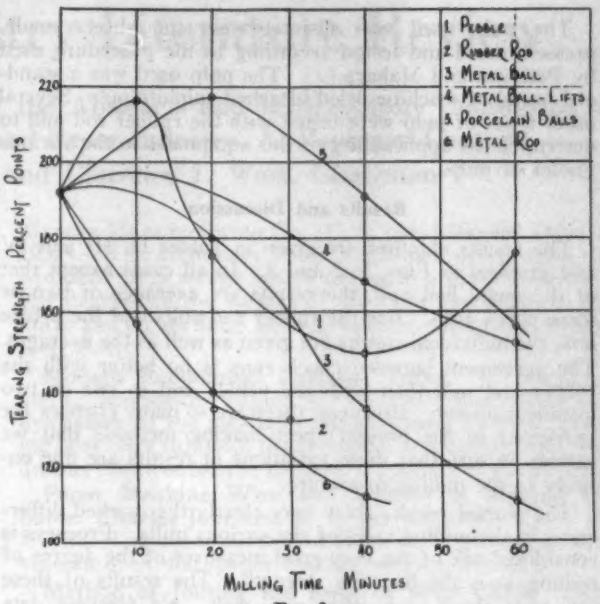

FIG. 3

Tearing strength.

in a previous study.(1) The optimum charges for the rubber covered rod mill were determined in a preliminary study which investigated the variables of consistence and ratio of pulp weight to rod weight. There has not yet been an opportunity to study the effect of changing these variables with the metal rod mill and it is quite possible that more desirable results can be obtained by using other variables.

The data used for the porcelain ball mill were taken from the paper by Peterson and Beyer.(2) A different sample of the same brand of bleached sulphite pulp used in this study was used by them. Both samples were tested with the pebble mill and from this data their figures were adjusted to compare with those of the present investigation.

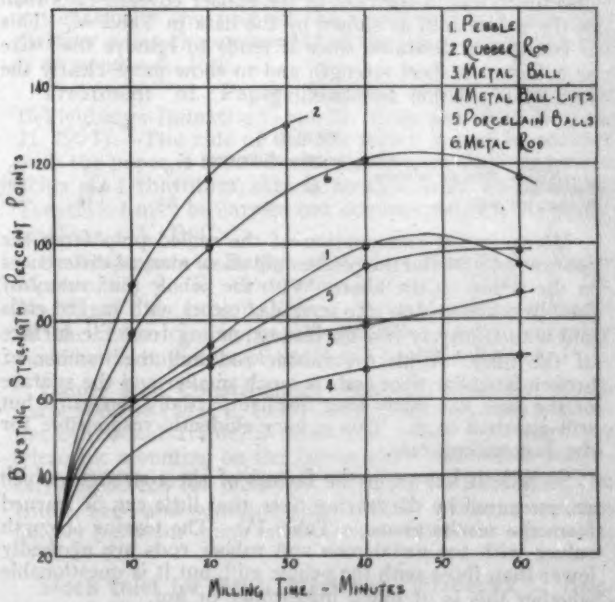

FIG. 2

Bursting strength.

The pulp used was disintegrated, the sheets made, pressed, dried and tested according to the procedure used by Peterson and Makara.(1) The pulp used was a standard brand of machine-dried bleached sulphite pulp. Several other types of pulp were tested with the rubber rod mill to determine the applicability of this equipment to the various grades of pulp.

Results and Discussion

The results obtained are given in Tables II, III and IV and graphed in Figs. 1, 2 and 3. In all cases except that of the metal ball mill, the results are averages of two or three check runs. For the rubber rod mills and the pebble mill, the individual results are given as well as the averages. The agreement between check runs is no better with the rubber rod mill than with the pebble and in one or two instances poorer. However, there are so many chances for variations in the present sheet making methods that we cannot be sure that these variations in results are due entirely to the milling procedure.

The plotted results show very clearly the marked differences in the milling rates of the various mills. Freeness is considered one of the very good measures of the degree of milling as is the bursting strength. The results of these two tests check each other very well. No freeness data were available for the porcelain ball mill but the bursting strength curves show that the rate of development for this equipment is approximately the same as that for the pebble mill. The metal ball mill, regardless of whether or not lifts were used, shows a much slower milling rate than the pebble mill. The freeness values for this equipment decrease, and the bursting strength values increase, more slowly. Both the metal rod mill and the rubber-covered rod mill give a much faster milling rate than the pebble mill. The freeness curves indicate that these two give approximately the same results but the higher bursting strengths with the rubber covered rods indicate that they give the quickest milling action. This is probably explained by the difference in fiber size reduction (cutting) by the two equipments. The softer surface of the rubber rods does not break the fibers as much as the metal rods. The fiber size reduction is also much less in the case of the rubber covered rods than in the pebble mill as shown by the data in Table V. This is considered desirable since it tends to remove fiber size as a factor in sheet strength and to show more clearly the rate of fibrillation and swelling.

TABLE V

	Fiber length—Millimeters		
Milling time in minutes	0	20	40
Pebble mill	2.1	1.26	1.02
Rubber rod mill	2.1	1.56	1.27

Microscopical examination of the milled pulp from the rubber rod mill and the pebble mill show marked differences in the action on the fiber. With the pebble mill, many of the fibers are broken into irregular pieces with ragged ends and with relatively few fibrillae extending from the surface of the fiber. With the rubber rod mill the number of broken irregular fiber ends is much smaller and the surface of the fiber has many long fibrillae partially separated but still attached to it. This is very evidently responsible for the fast milling rate.

So little is known of the factors of sheet strength which are measured by the tearing tests, that little can be learned from the results given in Table IV. The tearing strength values with the metal rods and rubber rods are markedly lower than those with the pebble mill, but it is questionable whether this is of much importance or not.

With regard to the presence of ash in the milled pulp, Peterson and Beyer(2) have shown that the quantity introduced by the porcelain ball mill is approximately one-third that introduced by the pebble mill. That which is present probably comes from the porcelain jar rather than from the hardened balls. Ash determinations made during the runs with the metal ball and metal rod mill show as would be expected practically no increase even with long milling periods.

In this study and a previous one, five other samples of pulp were milled by the pebble mill and by the rubber rod mill. These were: bleached aspen sulphite; bleached mistcherlich sulphite; strong unbleached sulphite; quick cooked unbleached sulphite; and unbleached sulphate kraft. The results obtained were much the same as with the pulp for which the data is given in this report, and it was not felt that further substantiation of the conclusions drawn here warranted the inclusion of this volume of data. In all cases the increased rate of milling was approximately the same as for the pulp previously discussed. With all pulps except the strong unbleached sulphite and the sulphate, the bursting strength reached a maximum in 20 minutes when the pulp was milled with rubber rods while when milled in the pebble mill it required 60 minutes or more. In each case the maximum strength attained was considerably higher for the rubber rod mill than for the pebble mill.

Conclusions

All the other types of milling equipment investigated are much more satisfactory from the standpoint of ash formation than the pebble mill. With the metal balls on rods and the rubber covered rods, the ash is entirely eliminated. With porcelain ball mill it is greatly reduced.

The metal ball mill is less satisfactory than the pebble mill in time required for milling. The porcelain ball mill shows little difference. The rubber covered and metal rod (when used with lifts) mills are much more satisfactory since the time required is greatly reduced.

The results are too incomplete to show the relative duplicability of tests with the several mills, but there is no indication that the metal rod or the rubber rod mill is less satisfactory than the pebble.

To summarize, it has been shown that both the metal rod and the rubber covered rod mill are a distinct improvement over the pebble mill in two respects; in that there is no ash introduced in the milled pulp and that the time required for milling is greatly reduced.

Further Work

The results presented for the metal rod mill are from the first trial of this equipment and will therefore have to be checked by further tests on various types of pulps. It has not been conclusively proven whether or not rubber covered rods can be made which will remain intact for long periods of use. This will be determined by tests with rods which are now being recovered. Both these mills are of materials and a design which can accurately be specified and readily duplicated and are an improvement in several respects over the pebble mill as already pointed out. Therefore it seems wise to continue the study of these two mills to determine which is the most satisfactory.

Acknowledgement

The experimental data used are drawn from the theses presented by senior students at the College of Forestry. Acknowledgement is hereby given to Prof. F. C. Peterson, who instituted and directed the preliminary work on the rubber covered rod mill and to Messrs. F. C. Crysler, J. C. Barthel, E. Rosenbloom and A. Wirpsa, who carried out the laboratory work.

Literature Cited

(1) Peterson and Makara, Paper Trade J. :35, (April 7, 1932).
(2) Tech. Assn. Papers, :285 (1933).

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Forest Products Laboratory Research on Paper Machine Variables. Warren A. Chilson and P. K. Baird. Paper Trade J. 97, No. 14: 43-46 (Oct. 5, 1933).—A brief outline of the study being made at the U. S. Forest Products Laboratory of the delineation and control of the variable inherent to the paper machine.—A. P.-C.

Paper Making Machine. Frank J. Timmerman. U. S. pat. 1,926,319 (Sept. 12, 1933).—A series of suction boxes are provided under the wire near the breast roll, the size of the perforations of the covers of successive boxes increasing from the breast roll towards the couch roll.—A. P.-C.

Fourdrinier Wire. Hamilton Lindsay and Edward J. Buell assignors to The Lindsay Wire Weaving Co. U. S. pat. 1,927,498 (Sept. 19, 1933).—The sizes of the warp and weft wires are related to each other in such a way that the plane of the tops of the weft knuckles is disposed above the plane of the center of the warp knuckles, so that the sheet has substantially the same smoothness on both sides.—A. P.-C.

Smoothing Device. Charles A. Dickhaut assignor to John Waldron Corp. U. S. pat. 1,925,092 (Sept. 5, 1933).—The device consists of a pair of parallel rolls, spaced apart, between which the coated paper is passed. The rolls are rotated so as to apply predetermined pressure equally on opposite sides of the paper.—A. P.-C.

The Trimbey-Witham, Jr., Consistency Regulator and Freeness Recorder. Anon. Paper Trade J. 97, No. 15: 25 (Oct. 12, 1933).—A brief description of the principle of the instrument and discussion of its merits.—A. P.-C.

One Year of Progress in Development of Paper Mill Equipment. Anon. Paper Ind. 15:376-381 (Oct., 1933).—A brief description of the principal new items of pulp and paper making equipment introduced during the past twelve months or so.—A. P.-C.

Wood Peeling Machine. Harold C. Swertfeger. U. S. pat. 1,910,133 (May 23, 1933).—Cutting means are mounted so as to swing about an axis parallel to the axis of the log into and out of cutting engagement with the log, and are shiftable longitudinally of the log to ensure peeling the latter throughout its length.—A. P.-C.

Barking Machine. Arthur M. Kirkwood. U. S. pat. 1,905,387 (April 25, 1933).—During barking, the logs are supported on a series of log carriers. Each carrier comprises a series of sprockets (one of which is driven), a pivoted lever arm carrying one of the sprockets, and an endless log-carrying chain running on the sprockets. The lever arm is adapted to place the sprockets and chain in three positions, one for receiving the log from the loading platform, the second for raising the log into contact with the rotary barking element (which is made to travel back and forth longitudinally of the log while the latter is rolled by the action of the chains), and the third for discharging the barked log.—A. P.-C.

Chipper Spout. Stanley D. Payzer assignor to D. J. Murray Manufacturing Co. U. S. pat. 1,906,486 (May 2, 1933).—The stationary knife is clamped down upon the bed plate by a wedge which moves in a plane inclined a few degrees to the surface of the knife and between the knife and an inclined bearing surface above the wedge.—A. P.-C.

Modern Economical Calender Drive. L. Kiessling and C. Neumann. Papier 36; 537-550 (June, 1933).—A discussion of the merits of shunt-wound motors, showing that they fulfill all the technical and economical conditions required for the modern calender drive.—A. P.-C.

Paper Machine Wire and Method of Making the Same. Charles Johnson. U. S. pat. 1,919,843. (July 25, 1933).—The outer surface of the wire is ground to provide an even, flat, paper-making surface.—A. P.-C.

Method of Joining the Ends of Wire Cloth. René Franck. U. S. pat. 1,922,940 (Aug. 15, 1933).—The ends of the cloth are placed together with the warp wires in alignment; the ends of alternate warp wires of one end are placed on one side of a weft wire common to both ends of the cloth, and of the same size as the other weft wires; alternate warp wires of the other end of the cloth are placed in alignment with the alternate warp wires of the first end but on the opposite side of the common weft wire, and the ends of all the warp wires are attached to the common weft wire.—A. P.-C.

Care of Felts for Fine Paper Manufacture. Frank C. Ladd. TAPPI Papers 16: 312-315 (June, 1933); Paper Trade J. 97, No. 3: 35-38 (July 20, 1933).—A general discussion.—A. P.-C.

Safety Device for Felt Conditioners. James T. Coghill assignor to The Noble & Wood Machine Co. U. S. pat. 1,921,217 (Aug. 8, 1933).—Means are provided for automatically shutting off the water supply to the conditioner when the movement of the latter across the felt is stopped.—A. P.-C.

Treatment of Paper Machine Felts. Deutsche Bekleidungs-Industrie G.m.b.H. Belg. pat. 393,428 (Jan. 31, 1933).—The side of the felt which comes in contact with the paper is treated with substances that neutralize acids, and the other side is treated with bactericides. Treatment may be carried out continuously on the paper machine.—A. P.-C.

Developments in Design of Modern Fourdrinier Paper Machines. J. E. Goodwillie. Paper Trade J. 96, No. 23: 37-38 (June 8, 1933).—A brief outline of some of the advances in paper machine design recently made by the engineers of the Beloit Iron Works.—A. P.-C.

Dandy Roll Construction. John A. Spencer. U. S. pat. 1,906,284 (May 2, 1933).—The roll comprises a skeleton cylindrical frame, a removable coiled wire cage for telescopic mounting on the frame and a removable design-carrying screen for telescopic mounting on the cage. The frame, cage and screen are individually made as separate unitary parts for quick telescopic assembly and separation.—A. P.-C.

Stock Inlet for Paper Machines. Frederick C. Bagley and Frank P. Silver assignors to Maine Seaboard Paper Co. U. S. pat. 1,906,355 (May 2, 1933).—The inlet

comprises a bottom apron, side plates and a top apron assembled as a unitary structure. Means accessible from the exterior are provided for bodily adjusting the inlet in a vertical direction.—A. P.-C.

Fourdrinier Head Box and Nozzle Assembly. Robert Bell-Irving and Percy Sandwell. U. S. pat. 1,909,150 (May 16, 1933).—The nozzle presents an upwardly inclined flow passage for delivering the stock on to the wire, and a rectifier is mounted in this passage.—A. P.-C.

Flow Box and Nozzle for Delivering Stock to Paper Machines. J. M. Voith. Fr. pat. 742,382.—The flow box and nozzle are mounted so as to be bodily adjustable in a vertical direction, in a horizontal direction toward or away from the breast roll, and angularly so as to vary the direction of delivery of the stock relatively to the wire.—A. P.-C.

Fourdrinier Machine. Charles H. Jaite and Ferdinand Beeser. U. S. pat. 1,909,106 (May 16, 1933).—The press felt is passed over a suction box in the opening of which is mounted a roll adapted to support the felt and relieve it of friction and wear as it travels over the box. The roll is adjustable vertically.—A. P.-C.

Paper Drier. Everett W. Clem assignor to Rice, Barton & Fales, Inc. U. S. pat. 1,908,406 (May 9, 1933).—The drier felt is passed over a brake drum, so that the sheet to be dried will travel at a speed different from that of the drier rolls.—A. P.-C.

Paper-Calendering Rolls. Emil Gminder. Brit. pat. 366,642 (Dec. 2, 1930).—The rolls are made partly or wholly of bast fibers which have been cottonized by chemical means, *e.g.*, bleaching and boiling, whereby the gluten connecting the embryo fibers or bast cells is destroyed.—A. P.-C.

G-E Variable Voltage Winder Drive with Regenerative Braking of the Unwinding Reel Installed at the Bogalusa Paper Co., Bogalusa, La. D. R. Shoults. Paper Trade J. 96, No. 23: 21-22 (June 8, 1933).—A description of the installation bringing out its merits.—A. P.-C.

Constant Tension Regulator on Reels and Unwinding Stands. Roscoe H. Smith. Paper Trade J. 96, No. 25: 31-33 (June 22, 1933).—A discussion of the advantages of adapting to paper mill requirements a constant tension regulator of the rotative-element type, which already is being used successfully in other industries.—A. P.-C.

Apparatus and Method for Treating Paper. John W. Youngchild and Joseph Wipfli assignors to Nekoosa-Edwards Paper Co. U. S. pat. 1,908,275 (May 9, 1933.)—A calender roll is moistened with liquid from a feed box, extending the length of the roll and having an edge contacting therewith. The liquid is fed into the feed box by means of a perforated pipe extending the full length of the box, and an outlet is provided to maintain the level of the liquid in the box slightly above the edge which is in contact with the roll.

Manufacture of Paper. George L. Bidwell assignor to Riegel Paper Corp. U. S. pat. 1,914,799 (June 20, 1933).—In order to produce paper free from wire and felt marks from highly gelatinized stock, on leaving the usual fourdrinier wire the wet sheet is transferred to a second wire equipped only with suction and press means before transferring to the felts.—A. P.-C.

Suction-Box Cover for Paper Machines. Edson R. Granger assignor to Chromium Corporation of America. U. S. pat. 1,910,330 (May 23, 1933).—The patent covers the use of chromium-plated suction-box covers.—A. P.-C.

Drive for Dandy Rolls. William B. Clements assignor to Bryant Paper Co. U. S. pat. 1,911,434 (May 30, 1933).—The dandy roll extends beyond the edges of the fourdrinier wire. A table roll of the same length as the dandy roll is mounted under the latter, and the portions projecting beyond the wire are provided with rubber bands which frictionally engage the projecting portions of the dandy to drive it at the same peripheral speed as the table roll.—A. P.-C.

Dandy. Frank S. McDonnell. U. S. pat. 1,903,311 (April 4, 1933).—An endless wire screen is trained around two rolls placed above and tangent to the fourdrinier wire and also around a third roll placed above and laterally offset from the two other rolls. The position of the top roll is adjustable so as to regulate the tension of the small wire passing around the three rolls and means are provided for washing this wire.—A. P.-C.

Wire-Faced Roll for Paper Machines. Charles L. Ellis assignor to Downington Manufacturing Co. U. S. pat. 1,911,310 (May 30, 1933).—The roll is covered with a helically-wound wire having a roughened exposed surface, over which is placed a wire, the roughness of the backing wire preventing circumferential or longitudinal displacement of the screen.—A. P.-C.

Developments in Design of Modern Fourdrinier Paper Machines. J. E. Goodwillie. Pacific Pulp Paper Ind. 7, No. 6: 11-12 (June, 1933).—A brief outline of some of the advances in paper machine design recently made by Beloit Iron Works.—A. P.-C.

The Formation of Paper on the Fourdrinier Wire. D. McNeill. Paper Maker & Brit. Paper Trade J. 85: TS74-78, 92-93 (March, April, 1933).—A discussion of the factors affecting the formation of paper between the breast roll and first suction box.—A. P.-C.

The Vacuum Box. James Strachan. Paper Maker & Brit. Paper Trade J. 85: TS97-98 (May, 1933).—A brief discussion.—A. P.-C.

The McDonnell Fourdrinier. G. A. Peterson. Paper Mill 56, No. 19: 10-11 (May 13, 1933).—The essential characteristic of the McDonnell fourdrinier consists in shaking the wire both at the breast roll and at a point half-way between the breast roll and the first suction box. Its merits are discussed.—A. P.-C.

Fourdrinier Shake and Formation. Herbert T. Randell. Paper Mill 56, No. 25: 5-10 (June 24, 1933).—A description of the development of shake mechanisms on paper machines to their present state of perfection.—A. P.-C.

Suction-Box Cover. J. F. Norton & Co., Ltd. Brit. pat. 360,284.—A suction-box cover is formed of perforated blocks, preferably of maple wood, which has been immersed in molten tallow or other lubricant under pressure, each block having dovetailed slots to fit tenons in the side-pieces of the box.—A. P.-C.

Stacked Suction Press-Rolls. G. H. Sheldon. World's Paper Trade Rev. Tech. Conv. No.: 32-58 (March, 1933).—After explaining the phenomena which occur in the removal of water from paper in plain and suction presses, a detailed description is given of a press installation in a British mill consisting of two superposed suction rolls surmounted by a granite roll and the advantages of this arrangement are pointed out.

Treatment of Webs and Sheets with Fluids. Gebhard Blaser assignor to I. G. Farbenindustrie A. G. U. S. pat. 1,910,670 (May 23, 1933).—The sheet of paper is drawn across orifices in the upper cover of a box or boxes filled with a liquid or gaseous medium with which the paper is to be treated, whereby a suction effect is produced drawing the liquid or gaseous medium out through the orifices.—A. P.-C.

Doctor for Paper Machine Rolls. Fred W. Vickery assignor to Vickery Inc. U. S. pat. 1,912,605 (June 6, 1933).—The doctor blade is attached to its support by

means of enlargements or projections in the thickness of the blade, lodged in an undercut slot in the support, from which they can be disengaged only by endwise movement. The enlargements can conveniently consist of pairs of studs attached at intervals along the rear edge of the blade.—A. P.-C.

Doctor for Paper Machine Rolls. Fred W. Vickery assignor to Vickery Inc. U. S. pat. 1,907,623 (May 9, 1933).—The doctor blade is carried yieldably in a single stiff support, which is itself attached yieldably to the usual loaded carrier, resilient means exerting pressure between the carrier and either the blade or its support to press the blade into contact with the roll.—A. P.-C.

Shake Mechanism for Paper Machines. Alonzo Aldrich and Earl E. Berry assignors to Beloit Iron Works. U. S. pats. 1,917,287 and 1,917,288 (July 11, 1933).—The table rails are constructed in sections and each section (except the couch roll section) is provided with an individual shaking mechanism, the amplitude and frequency of which are independently adjustable while the machine is in operation. All the joints or bearings of the shake mechanisms are annular or of the rotary type, permitting of easy lubrication and take-up for wear. The construction provides a link motion, centralizes the heavy load and facilitates the work by leverage arrangements, permitting of operating the shake at high speeds. The shake mechanism is mounted so as to be carried by the table when the latter is moved out for changing wire.—A. P.-C.

Fourdrinier Paper Machine. Austin E. Cofrin. U. S. pat. 1,917,098 (July 4, 1933).—Part or all of the conventional tube rolls are replaced by scraper bars or rolls having a series of raised portions and recesses, which in successive rolls or bars are staggered. This is claimed to produce improved felting in all directions and to increase the strength of the sheet in the cross-machine direction.—A. P.-C.

Paper Machine. Herman L. Kutter assignor to The Paper and Textile Machinery Co. U. S. pat. 1,913,678 (June 13, 1933).—In a paper machine of the type in which the stock is fed directly to a suction forming roll, a fluted agitating roll is mounted parallel and close to the forming roll in the stock-delivering chamber, so as to obtain efficient crossing and interlacing of the fibers.—A. P.-C.

Fourdrinier Wire Seam. John R. Buchanan and Thos. M. Cray. U. S. pats. 1,909,914 and 1,909,915 (May 16, 1933).—At each end of the wire cloth (before joining) the warp wires are allowed to project somewhat beyond the last weft wire and are fixed to this weft wire as by soldering, welding, fusing or brazing. The warp wires are then cut close to the end weft wire and the ends of the respective warp wires are joined as by soldering, etc. No. 1,909,914 covers a wire seamed in this manner and No. 1,909,915 covers the method of making the seam.—A. P.-C.

Apparatus for Making Paper of Uneven Thickness. Lester C. Perkins assignor to Parsons Paper Co. U. S. pat. 1,903,655 (April 11, 1933).—This is an improvement on U. S. pat. 1,147,331. The former patent provides a series of narrow drums, each co-operating with a "tracker" resting on the moist sheet on the paper machine wire, so as to form grooves or channels in the sheet. The present patent provides means for preventing water adhering to the small drums from being projected on to the wet sheet and marring it.—A. P.-C.

Paper Making Apparatus. William R. Kellet assignor to Paper Patents Co. U. S. pat. 1,905,911 (April 25, 1933).—In machines in which a felt is used to pick up the sheet from the wire, improved drying of the pick-up felt at high speeds is obtained by passing the felt through a suction press in advance of the point at which it picks the paper off the wire.—A. P.-C.

Power Plant

Some Measurements in the Enso Sulphate Cellulose Plant. E. Kalaja. Finnish Paper and Timber J. 15: 470-473 (1933).—Measurements were made in an attempt to obtain the heat balance in the plant. The results showed that the heat input was 5,373,000 Cal. and the heat obtained was 2,677,800 Cal. The main losses were ascribed to heat losses in the waste gas, amounting to 26.5 per cent and imperfect heat exchange in the water preheaters, amounting to 13.6 per cent. The ratio of sulphates added as Glauber's salts to sulphates recovered from the sulphate liquors was 30.2 to 36.1 kg.—C. J. W.

Power Plant in Paper Mills. M. G. S. Swallow and J. Ernest Lee. World's Paper Trade Rev. 99: 946-954, 990, 992, 1021-1031, 1070-1074 (Mar. 31, April 7, 1933); Paper Maker & Brit. Paper Trade J. 85: TS106-112 (May, 1933).—A discussion of the selection of equipment for the production of by-product power from process steam in paper mills.—A. P.-C.

A New Paper Mill Power Plant. J. D. Crozier. World's Paper Trade Rev. 100: 332-340, 389-390, 408-418, 522-529 (Aug. 4-18, 1933).—A detailed description of the new power plant at the Dartford paper mills of Wiggins, Teape and Co. (1919), Ltd.—A. P.-C.

Centrifugal Pumps in the Pulp and Paper Industry. F. V. Sams. Pacific Pulp Paper Ind. 7, No. 3: 8-9, 11 (March, 1933).—A brief discussion of the savings to be effected by checking up on centrifugal pumps to see that they are operating under the optimum conditions for which they were designed, or that they are adjusted to give optimum efficiency under existing operating conditions.—A. P.-C.

Lubrication of Bearings. J. W. Stack and A. Hutchinson. I. Ball and Roller Bearings. Paper Mill 56, No. 29: 4, 6-8 (July 22).—II. Reduction Gears. *Ibid.* No. 31: 4, 13 (Aug. 5, 1933).—A general discussion pointing out the importance of proper bearing lubrication and the essentials such a lubricant should possess.—A. P.-C.

Electrical Maintenance. H. C. Busser. Paper Mills 56, No. 21: 6-8 (May 27, 1933).—A discussion of its importance, with a description of the system in use at the York Haven plant of International Paper Co.—A. P.-C.

Lubrication of Ball and Roller Bearings and the Lubrication of Gear Reduction Sets. J. W. Stack and A. Hutchinson. Paper Trade J. 96, No. 24: 34-38 (June 15, 1933).—The importance of proper lubrication and the essentials a lubricant should possess are pointed out.—A. P.-C.

Power Plant Reports. Anon. Paper Trade J. 96, No. 25: 28-30 (June 22, 1933).—A set of proposed standard forms is presented, for power plant operators to use in analysing and reporting results of operations and for comparing their results with those of other plants.—A. P.-C.

Anticipating Maintenance Expense by Proper Inspection. E. E. Berry. Paper Trade J. 96, No. 25: 25-28 (June 22, 1933).—A discussion of the causes of mechanical failures of mill equipment, together with suggestions for bettering present conditions.—A. P.-C.

Anti-Friction Bearings Make Real Savings in Paper Mills. Francis A. Westbrook. Paper Ind. 15: 200, 206 (July, 1933).—Examples are given of savings effected in four different mills by the use of anti-friction bearings on paper machines.—A. P.-C.

Complete Overload Protection Extends Life of Motor

and Reduces Maintenance. R. R. Baker. Paper Trade J. 97, No. 2: 22-23 (July 13, 1933).—A brief outline of the possible applications of Westinghouse thermoguard motors (provided with a thermostat built into the motor) in pulp and paper mills, and of their advantages as regards protection against overload.—A. P.-C.

Pumps and Pumping. William P. Gargan. Paper Ind. 15: 195-199 (July, 1933).—Recommendations are made regarding the types of pumps suitable for various services in pulp and paper mills.—A. P.-C.

Selection of a Steam Generator at the Present Time. Emile Huc. Papier 36: 529-534 (June, 1933).—A discussion of some of the factors which should be considered in selecting a steam boiler.—A. P.-C.

Development of Power As a By-Product. E. J. Calnan. Pulp Paper Can. 34: 507-513 (Aug., 1933).—A discussion of the relations of fuel cost to power cost that tend towards profitable by-products power development as applied to the paper industry, and illustrating a method whereby the problem may be worked out under stated conditions.—A. P.-C.

A Modern Mill Tile Flooring. Anon. Papier 36: 649-657 (July, 1933).—The advantages of cast iron flooring under heavy traffic are brought out. Its drawbacks have been minimized and advantages enhanced by means of a newly developed hollow, triangular, frustro-conical iron tile.—A. P.-C.

Miscellaneous

Colloids. J. Palmen. Finnish Paper and Timber J. 15, no. 5:178, 180-181; no. 6:212-214; no. 11:445-446, 448 (Mar. 15, 31, June 15, 1933).—General discussion of colloids.—C. J. W.

What Science is Doing to Improve Printing Papers. C. G. Weber. Nat. Printer Journalist 51, no. 7:10-11 (July, 1933).—Review of the recent activities of the Bureau of Standards for improving the relation of the properties of paper to lithography requirements.—C. J. W.

Paper and Printing Ink. J. Bekk. Papier-Ztg. 58, no. 57: 944, 946 (July 19, 1933).—Bekk discusses the important properties of papers and printing inks, as well as the difficulties encountered in the printing process. Smoothness of papers and viscosity of printing ink are independent properties; absorbability and color strength, on the other hand, are the result of a typical reaction between paper and ink. Bekk describes a practicable test for determining the ability of the paper to take the color. —C. J. W.

The Corroding Action of Ink and the Age of Documents. O. Mezger, W. Heess and H. Roll. Papier-Ztg. 58, no. 71:1197-1198 (Sept. 6, 1933).—The authors traced the corroding action of certain writing inks back to their content in sulphuric acid. They explain how the sulphuric acid is formed in the paper and how its presence can be used for determining the age of certain documents and for detecting eventual falsifications in signatures, dates, etc.—C. J. W.

Paper Surface and Printing Ink. Papier-Ztg. 58, no. 72:1222-1224 (Sept. 9, 1933).—The importance of using the right kind of paper for the different types of printing processes is stressed. The printing ink should be of intense color and viscous and at the same time not adhere too much to the surface of the printing mold. The paper should be as smooth as possible, soft and pliable and have good receptive qualities; its surface, on the other hand, should be compact in order to avoid fluffing.—C. J. W.

Hygroscopicity of Paper. B. Offen. Paper Ind. 15: 142-143 (June, 1933).—A discussion of the necessity of humidity control of air in printing establishments in order to avoid trouble due to paper hygroscopicity.—A. P.-C.

Deterioration of Book Papers in Libraries. Arthur E. Kimberly and Adelaide L. Emley. Bur. of Standards Miscellaneous Pub. No. 140. 7 p. (1933).—Paper from books stored in urban institutions has a higher acidity and copper number, and a lower alpha-cellulose content and folding endurance than that from identical volumes kept in country libraries. This greater deterioration is due to sulphur dioxide in the atmosphere from fuel combustion. Papers containing chemically refined rag and wood fibers were invariably in better condition than papers containing appreciable quantities of groundwood. Data are given on the kinds of fibers found in the book papers as related to the dates of publication.—A. P.-C.

Technical and Economic Developments in the Field of Non-Fibrous Paper Making Raw Materials (1932). Anon. Paper Trade J. 96, No. 25: 34-36 (June 22, 1933). —A review dealing with casein, chlorine and bleaching powder, clays and fillers, lime and limestone, rosin and turpentine, rosin size, sodium aluminate, starches, and sulphur.—A. P.-C.

Pulpwood Holdings, A Company Asset. George Ostrander. Paper Trade J. 96, No. 26: 28-29 (June 29, 1933).—From a comparison of the costs of purchased pulpwood and pulpwood obtained from the Finch-Pruyn Co.'s own stumpage, it is considered that the careful acquisition of stumpage at proper prices at this time and the proper management of the holdings is the most economical method of supplying the industry with its raw material—A. P.-C.

Preservation of Printed Materials and Manuscripts. Anon. Paper Trade J. 97, No. 3: 32-35 (July 20, 1933). —Abstract of a report to the League of Nations of answers to a questionnaire sent to national commissions throughout the world.—A. P.-C.

Report of the Tappi Committee on Permanence and Durability of Paper. F. C. Clark *et al.* Paper Trade J. 97, No. 4: 33-36 (July 27, 1933).—The committee presents such facts as it has been able to gather together relating to the permanence, durability and deterioration of paper, its causes and remedy, together with its opinion regarding requirements for future experimental work.—A. P.-C.

The Maintenance Engineer. William Taylor. Paper Ind. 15: 259-260 (Aug., 1933).—A general discussion of the functions and necessary qualifications of a paper mill maintenance engineer.—A. P.-C.

Modernizing Pulpwood Operations. Alex Koroleff. TAPPI Papers 16: 350 (June, 1933); Paper Trade J. 97, No. 3: 31 (July 20, 1933).—A brief outline of the modernization of pulpwood operations at present going on in Eastern Canada and of line of possible further improvement.—A. P.-C.

Transportation and Mill Handling of Pulp Wood. George D. Bearce. TAPPI Papers 16: 330-331 (June, 1933); Paper Trade J. 97, No. 3: 29-30 (July 20, 1933). —A brief outline of present-day North American practice. A. P.-C.

The Dirt Content of Chips. W. M. Osborne. TAPPI Papers 16: 308 (June, 1933); Paper Trade J. 97, No. 1: 40 (July 6, 1933).—It is pointed out that by keeping a close and systematic check on the dirt content of chips, the dirt content of pulp or paper can be kept down and at the same time shows when increase in dirt in pulp or paper is due to a source other than the wood.—A. P.-C.

Paper Making Studies in France and Italy. Louis E. Wise. Paper Ind. 15: 253-255 (Aug., 1933).—A brief review of recent contributions by French and Italian investigators.—A. P.-C.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING APRIL 7, 1934

CIGARETTE PAPER

Standard Products Corp., Paris, Havre, 38 cs.; H. H. Strauss, Washington, Havre, 21 cs.; American Tobacco Co., by same, 200 cs.; De Manduit Paper Corp., by same, 159 cs.

WALL PAPER

———, Washington, Havre, 11 cs.; J. E. Bernard & Co., Europa, Bremen, 1 ble.

NEWSPRINT

Star Co., Markland, Liverpool, N.S., 1,739 rolls; N. Y. Tribune, by same, 1,659 rolls; World Telegram, by same, 650 rolls; Bridgeport Herald Corp., by same, 138 rolls; ———, Stavangerfjord, Oslo, 411 rolls.

PRINTING PAPER

Japan Paper Co., Ascania, Southampton, 2 cs.; Ozalid Corp., Breedyk, Rotterdam, 108 cs.

WRAPPING PAPER

E. Dietzgen & Co., Black Falcon, Rotterdam, 39 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., Ascania, Southampton, 6 cs.

FILTER COMPOUND

Gerhard & Hey, Breedyk, Rotterdam, 30 cs., 4 crates.

FILTER PULP

———, American Banker, London, 50 cs.

SURFACE COATED PAPER

Gevaert Co. of America, Westernland, Antwerp, 18 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Britannic, Liverpool, 50 cs. (duplex).

TISSUE PAPER

Meadows Wye & Co., Britannic, Liverpool, 2 cs.; W. J. Byrnes, Berengaria, Southampton, 1 cs.

DESIGN PAPER

Wilkesbarre Lace Mfg. Co., Britannic, Liverpool, 1 cs.; T. Wilson & Co., by same, 1 cs.

BLOTTING PAPER

Standard Products Corp., Paris, Havre, 9 cs.

IVORY BOARD

R. Wilson Paper Corp., Bredyk, Rotterdam, 38 cs., 24 rolls.

MISCELLANEOUS PAPER

Keuffel & Esser Co., Pr. Roosevelt, Hamburg, 33 rolls, 15 cs.; Keuffel & Esser Co., Washington, Havre, 29 rolls, 19 cs., ———, Shikisan Maru, Kobe, 6 cs.; ———, American Banker, London, 5 cs.; Steiner Paper Corp., Westernland, Antwerp, 6 cs.; R. E. Thibout, Paris, Havre, 3 bls.

RAGS, BAGGINGS, ETC.

J. J. Ryan & Son, H. Jaspar, Antwerp, 242 bls. cotton waste; Guaranty Trust Co., by same, 78 bls. rags; N. Schwab & Sons, Black Falcon, Rotterdam, 141 bls. cotton waste; ———, by same, 200 bls. cotton waste; Darmstadt Scott & Courtney, by same, 4 bls. bagging; E. J. Keller Co., Inc., Black Falcon, ———, 57 bls. bagging; Trust Co. of North America, Utsire, Barcelona, 456 bls. rags; Irving Trust Co., by same, 33 bls. rags; Bank of N. Y. Trust Co., by same, 74 bls. rags; Phila. National Bank, by same, 147 bls. rags; ———, by same, 699 bls. cotton waste; ———, American Banker, London, 55 bls. paper stock; Chase National Bank, Oregon Maru, Kobe, 20 bls. rags; ———, Cameronia, Glasgow, 40 bls. paper stock; Bank of N. Y. Trust Co., by same, 59 bls. bagging; C. Nelson, by same, 22 bls. rags; E. J. Keller Co., Inc., Cameronia, ———, 133 bls. rags; E. J. Keller Co., Inc., Excalibur, ———, 76 bls. bagging; E. J. Keller Co., Inc., Excalibur, ———, 153 bls. rags; ———, Excalibur, Alexandria, 190 bls. rags; P. Berlowitz, by same, 115 bls. rags; ———, Liberty, Havre, 31 bls. cotton waste; O'Neill Bros., by same, 65 bls. cotton waste; E. J. Keller Co., Inc., Liberty, ———, 74 bls. rags; ———, Washington, Hamburg, 70 bls. jute card waste; J. J. Ryan & Son, Breedyk, Rotterdam, 512 bls. jute card waste; E. J. Keller Co., Inc., Sunnanvik, ———, 300 bls. rags.

OLD ROPE

E. J. Keller Co., Inc., Sunnanvik, ———, 40 bls.

WOODPULP

Bulkley Dunton & Co., Black Falcon, ———, 840 bls. wood pulp, 168 tons; Trust Co. of North America, Sagoporack, Norrsundet, 1,750 bls. sulphate, 355 tons; Bulkley Dunton & Co., Sagoporack, ———, 1,250 bls. wood pulp, 250 tons; Price & Pierce, Ltd., Sagoporack, Wallvik, 300 bls. sulphite, 50 tons; E. J. Keller Co., Inc., Washington, ———, 339 bls. wood pulp, 52 tons; Guaranty Trust Co., Stavangerfjord, Drammen, 1,000 bls. sulphite; The Borregaard Co., Inc., Stavangerfjord, Sarpsborg, 336 bls. sulphate; Chemical Bank Trust Co., Stavangerfjord, Oslo, 300 bls. sulphite; J. Andersen & Co., by same, 665 bls. sulphite; J. Manheimer, Breedyk, Rotterdam, 20 bls. wood pulp; A. Giese & Son, by same, 30 bls. wood pulp.

ALBANY IMPORTS

WEEK ENDING APRIL 7, 1934

A. P. W. Paper Co., Dagali, Sheet Harbor, 11,117 bls. ground pulp, 2,428 tons.

PHILADELPHIA IMPORTS

WEEK ENDING APRIL 7, 1934

Bank of N. Y. Trust Co., Utsire, Barcelona, 202 bls. rags; Gilman Paper Co., Markland, Liverpool, N.S., 1,767 rolls newsprint; ———, Excalibur, Alexandria, 50 bls. rags; E. J. Keller Co., Inc., Excalibur, ———, 73 bls. rags; E. J. Keller Co., Inc., Liberty, ———, 183 bls. rags; Philadelphia Natl. Bank, Liberty, Havre, 87 bls. rags; Phila-

delphia Natl. Bank, Liberty, Dunkirk, 517 bls. rags; Castle & Overton, Inc., by same, 302 bls. rags; Bank of N. Y. Trust Co., Coelleda, Belfast, 87 bls. paper stock; Chemical Bank Trust Co., T. Fagelund, Tofte, 3,825 bls. sulphite; ———, by same, 52 rolls newsprint; The Borregaard Co., Inc., T. Fagelund, Hurum, 1,344 bls. sulphate; ———, T. Fagelund, Oslo, 65 rolls newsprint; Irving Trust Co., by same, 1,000 bls. mechanical pulp; Irving Trust Co., by same, 1,200 bls. chemical pulp; J. Andersen & Co., by same, 500 bls. sulphite; Scott Paper Co., Dago, Port Medway, 11,680 bls. pulpwood; Tradesmans Natl. Bank, Sagoporack, Norrsundet, 1,225 bls. sulphate; Perkins Goodwin & Co., by same, 250 bls. sulphate; ———, Sagaporack, Stugsund, 1,000 bls. sulphate; Chemical Bank & Trust Co., Sagoporack, Iggesund, 830 bls. sulphite; Chemical Bank & Trust Co., Tampa, Tofte, 2,850 bls. sulphite; The Borregaard Co., Inc., Tampa, Oslo, 500 bls. sulphite; Irving Trust Co., by same, 1,200 bls. chemical pulp; Irving Trust Co., by same, 3,080 bls. mechanical pulp; Castle & Overton, Inc., Scanyork, Helsingfors, 3,501 bls. sulphite; Bulkley Dunton & Co., Haimon, ———, 600 bls. wood pulp; Bank of N. Y. Trust Co., Haimon, Hamburg, 1,240 bls. wood pulp; Castle & Overton, Inc., by same, 1,975 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING APRIL 7, 1934

National City Bank, Utsire, Barcelona, 226 bls. bagging; Bank of N. Y. Trust Co., by same, 142 bls. tares.

CHARLESTON IMPORTS

WEEK ENDING APRIL 7, 1934

Darmstadt Scott & Courtney, Hoyeisan Maru, Kobe, 1,460 bls. bagging; Loumar Textile By-Products, Inc., by same, 800 bls. bagging.

Code Authority for Waste Paper Trade

The National Association of Waste Material Dealers, Inc., through its Waste Paper Division, the Waste Paper Institute, announces that the first code authority set up for the waste material trade is for the Waste Paper Trade, having been organized in Washington, D. C., April 3.

David Charak, president of the Federal Paper Stock Company, St. Louis., Mo., was elected chairman of the Code Authority, and Samuel Hershman, president of I. Hershman & Co., Inc., of New Haven, Conn., was elected secretary.

It was agreed at this meeting that a supplemental code, practically the same as the one originally submitted, be submitted again. A budget committee made up of William J. McGarity of the Penn Paper and Stock Company, Philadelphia, Pa., and H. M. Bailey will prepare and submit a budget to take care of the activities of the Waste Paper Code Authority at a further meeting which will probably be held within the next two weeks.

David Charak was also elected a member of the Waste Trade Committee to represent the Waste Paper Trade.

Equipment Arrives at Hantsport

The equipment has arrived for the Canadian Keys Fibre Company plant at Hantsport, N. S. The factory will employ about thirty men. The new building is 68x58 feet, one story high, and has been completed on property adjoining the Minas Basin Pulp and Paper Mills, which will supply the raw pulp for pit plates, luncheon plates and tea trays, which will be the three main lines of production during the first year of operation. It is anticipated that the mill will start about May 1.

PHILADELPHIA PAPER TRADE MEETS

(*Continued from page* 14)

tion; William Meeks, manager, Typothetae of Philadelphia; N. A. Schoenbucher, assistant to Mr. Slote, secretary of Southern New York and Middle Atlantic States Region. Seated at the speakers' table were F. A. O'Neill, Sr., Frederick S. Balch, Harry Donahue, Norman Fort, W. S. Wilcox, Morgan H. Thomas, Wm. H. Kilhour, and Executive-Secretary of the Philadelphia Paper Trade Association, N. W. Walker.

The occasion was graced by the presence of the following ladies: Mrs. H. C. Davis, H. C. Davis Paper Company; Grace Smithers, Quaker City Paper Company; C. A. Woods, Paper House of Pennsylvania; Nellie A. Mulreanil, Garrett-Buchanan Company; M. E. Bidden, Sanitary Products Corporation; A. C. Shoemaker, J. L. N. Smythe Company; M. K. Fuchsluger, J. L. N. Smythe Company; Evelyn Ann McLaughlin, Typothetae of Philadelphia; and E. M. Edgar, Whiting Patterson Company, Inc. The ladies were signally honored by having as their host, C. N. Maglathlan, of Mohawk Paper Mills.

Glowing tributes by Norbert A. Considine were paid to Evelyn Ann McLaughlin, secretary of the Credit Control business of the Paper Trade Association of Philadelphia, who has devoted her whole heart and soul in the most effective thing ever done by the Paper Trade Association; and to Mrs. Doris Lewis and N. W. Walker for their efficient services in connection with the duties of the newly established headquarters of the Philadelphia Paper Trade Association, in the Drexel Building.

Fred Rooney to Sell Mill Equipment

It will be pleasing and interesting news to his many friends in the paper and pulp industry to learn that Fred J. Rooney, for many years general superintendent of the Upson Company at Lockport, N. Y., and a former president of the American Paper and Pulp Mill Superintendents Association, has decided to enter the field of selling mill equipment. With his many years' experience in the equipping, operation and production, Mr. Rooney should be in a position to render invaluable aid to buyers of mill equipment.

For the present he is representing the Meyers-Mesco wide range of Consistency Regulators which are manufactured by the Merritt Engineering and Sales Company, Inc., of Lockport, N. Y. Some of these products are Consistency Regulators, Viscosity Regulators, heavy fuel oil for burners, heavy fuel oil for Diesel engines, Japanese lacquer for dip or spray covering and sizings and coatings. Mr. Rooney's business address is 326 High street, Lockport, N. Y.

Allied Issues New Folders

The Allied Paper Mills, of Kalamazoo, Mich., are releasing to the jobbing trade for distribution to the printers four attractively printed specimens of White Allied Porcelain Enamel Book. The New York office of the Allied Paper Mills is located at 230 Park Avenue and is under the management of J. K. Hutchison.

Munising Paper Co. Report

The Munising Paper Company reports as follows: For 1933: Net income after expenses, depreciation, taxes and other charges, $63,434, equal after 6 per cent preferred dividend payments to 16 cents a share on 120,000 common shares, contrasted with net loss of $273,596 in 1932.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, April 11, 1934.

Conditions in the local paper market are favorable. Demand for the various standard grades of paper is fairly active. Sales forces of the leading paper organizations are conducting a strenuous campaign for orders and are generally optimistic. Prices are holding to previously quoted levels.

The newsprint paper market continues to show signs of improvement. Consumption is running 20 per cent higher than a year ago. A gain of 31 per cent in total advertising lineage of New York City newspapers in March as compared with March, 1933, is estimated by Media Records, Inc.

Demand for the various standard grades of fine paper is fairly brisk. Writing and cover papers are moving freely. Tissues are in excellent request. The coarse paper market is displaying a strong undertone. Board mill manufacturing operations are expanding. Quotations are generally well maintained.

Mechanical Pulp

The ground wood pulp market continues firm. Production of mechanical pulp in North America and abroad is about sufficient to take care of immediate needs, although accumulations are not excessive. Supplies are moving into consumption at a steady pace. Prices are generally holding to schedule.

Chemical Pulp

Steadiness prevails in the chemical pulp market. Navigation from the Baltic ports has reopened and the first shipments of the season are reported to have left North Sweden for Atlantic Coast ports. Demand for the various grades of chemical pulp is slightly better. Prices remain unchanged.

Old Rope and Bagging

The old rope market is only moderately active. Demand for both domestic and imported old manila rope is still restricted. Small mixed rope is moving slowly. Old rope quotations remain unchanged. The bagging market is fairly steady. Scrap and gunny bagging are in moderate request. Roofing bagging is quiet.

Rags

Some improvement is reported in the domestic rag market. Demand for new cotton rags is fairly brisk. No. 1 white shirt cuttings continue strong. Old cotton rags are more active. Roofing grades, however, are listless. No radical changes have transpired in the imported rag market, which is still affected by the exchange situation.

Waste Paper

The outlook for the lower grades of paper stock is more promising now that board mill business is improving, and quotations on strictly folded news and No. 1 mixed paper should become firmer. Some of the higher grades of waste paper are stronger and advanced prices have been reported on white envelope cuttings and new manila cuttings.

Twine

Most of the business transacted in the local twine market during the past week was along routine lines. Supplies are moving into consumption in fairly good volume for the time of year. Inquiries for future delivery are being received in moderate volume. Prices are holding up well.

TAPPI Notes

Chester G. Landes, formerly chemist with the Mead Corporation, Chillicothe, Ohio. is now with the Fitchburg Paper Company, Fitchburg, Mass.

Reinold Woodford, formerly of the Rapinwax Paper Company, Minneapolis, Minn., is now with Zimmer Paper Products, Inc., Indianapolis, Ind.

H. A. Morrison has been transferred from the Chicago to the New York office of Oliver United Filters, Inc.

Ralph Reid, formerly chief chemist of the St. Helens Pulp and Paper Company, St. Helens, Ore., is now with the Spaulding Paper Company, Newberg, Ore.

Harry E. Patterson, formerly chemist at the Greenville, Miss., mill of the U. S. Gypsum Company, is now at the Chicago mill of the Container Corporation of America.

Leo S. Burden, formerly resident manager of the Rainier Pulp and Paper Company, is now operating manager of the Soundview Pulp Company, Everett, Wash.

The next meeting of the New England Section of TAPPI will be held at Fitchburg, Mass., on April 27. It will meet on May 18 at Holyoke, and on June 15th at Dalton, Mass.

The next meeting of the Lake States Section of TAPPI will be held on May 8 at Appleton, Wis., at which time officers for the ensuing year will be elected.

Minnesota Paper Co. Expands

MINNEAPOLIS, Minn., April 9, 1934—Further evidence of an optimistic outlook for the year 1934, comes from Minneapolis, Minn. April 1, found the Minnesota Paper and Cordage Company, wholesale distributors in the Twin Cities, of wrapping and fine papers, paper specialties and twine, expanding itself to larger and more spacious office and warehouse facilities, located at 730 Washington Avenue North, to take care of its continually increasing list of satisfied customers.

With its added delivery service and enlarging of both its sales and office personnel, the Minnesota Paper and Cordage Company feels a satisfaction in being able to contribute its share to the effort of industry in putting the country back on the road to recovery.

Officers of the company include, E. O. Turnquist, president; G. F. Goulet, secretary; H. L. Strege, assistant treasurer; F. A. Schmit, sales manager, and W. C. Wilson, manager of the Fine Paper Department.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, April 11, 1934.

BLANC FIXE.—Steadiness prevails in the blanc fixe market. Prices are holding to previously quoted levels. The pulp is selling at from $42.50 to $45 per ton, in bulk; while the powder is offered at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—The position of the bleaching powder market is practically unchanged. Contract shipments are moving in fairly good volume. Prices are well maintained. Bleaching powder is quoted at from $1.90 to $2.15 per 100 pounds, in drums, at works.

CASEIN.—The casein market is fairly active. Domestic standard ground is quoted at 12½ cents and finely ground at 13½ cents per pound. Argentine standard ground is selling at 14¾ cents and finely ground at 15 cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Demand for caustic soda is persistent. The contract movement is well up to average. Solid caustic soda is still quoted at from $2.60 to $3.10; while the flake and ground are selling at from $3 to $3.05 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market continues firm. Contract shipments are moving regularly. Prices are unchanged. Imported china clay is quoted at from $13.50 to $21 per ton, ship side; while domestic paper making clay is selling at from $5 to $12 per ton, at works.

CHLORINE.—Trading in the chlorine market was fairly brisk during the past week. Prices are holding to schedule, without difficulty. Chlorine is quoted at from $2 to $2.25 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is slightly firmer. Grades of gum rosin used in the paper mills are quoted at from $6.10 to $6.45 per 280 pounds, in barrels, at works; while wood rosin is selling at $5.10 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Paper mill demand for salt cake is brisk. The contract movement is fairly heavy. Salt cake is still quoted at from $12 to $14; chrome salt cake at from $12 to $12.50 per ton, at works; and imported salt cake at from $12 to $12.50 per ton, on dock.

SODA ASH.—The soda ash market is fairly buoyant. Shipments against contract are moving freely. Prices remain unchanged. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.10; in bags, $1.40; and in barrels, $1.50.

STARCH.—The starch market is rather quiet at present. Supplies are moving into consumption in moderate volume. Prices remain unaltered. Special paper making starch is quoted at $2.67 per 100 pounds, in bags; and at $2.95 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Conditions in the sulphate of alumina market are fairly satisfactory. Prices are holding to schedule. Commercial grades are quoted at from $1.35 to $1.50; while iron free is selling at $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and nearby car loads, the quotation is $21 per ton.

TALC.—Most of the business transacted in the talc market during the past week was along routine lines. Domestic talc is still quoted at from $16 to $18 per ton, in bulk, at eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	—
Bonds	6.00	@	—
Index	6.00	@	—
Writings—			
Extra Superfine	6.50	@	—
Superfine	6.25	@	—
Tub sized	5.75	@	—
Engine sized	5.50	@	—
Book, Cased—			
S. & S. C.	5.35	@	5.75
S. & S. C. Litho.	5.60	@	6.00
M. F.	5.10	@	5.50
Coated and Enamel	5.90	@	6.55
Coated Litho	5.90	@	6.55
Tissues—Per Ream—			
White No. 1	.82½	@	.85
White No. 2	.67½	@	—
Anti-Tarnish M. G. only	1.00	@	—
Colored	.85	@	—
Kraft	.70	@	—
Manila	.67½	@	.70
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.11	@	—
No. 2	.10	@	—
Bleached, basis 20 lbs.	.13	@	—

(Delivered New York)

News, per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Side Runs	25.00	@	—
Kraft—			
No. 1 Domestic	4.75	@	5.00
No. 2 Domestic	3.87½	@	—
Southern	3.87½	@	—
Boards—per ton—			
News	45.00	@	50.00
Chip	42.50	@	47.50
Sgl. Mla. Ll. Chip	52.50	@	55.00
Jute Lined Chip	52.50	@	55.00
White Patent Coated	65.00	@	70.00
Binders Boards	68.00	@	72.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	27.00	@	29.00
Dry	27.00	@	30.00

(F.o.b. Mill)

No. 1 Domestic and Canadian	24.00	@	29.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Division 1	2.85	@	—*
Division 2	2.80	@	—*
Division 3	2.75	@	—*
Prime Qualities—			
Class 1. All Prime Easy Bleaching	2.25	@	—*
Other Than Easy Bleaching—			
Class 2. Higher Than Standard	2.20	@	—*
Class 3. Standard	2.15	@	—*
Class 4. Lower than Standard	2.10	@	—

(On Dock, Atlantic Ports)

Kraft No. 1	1.85	@	1.90
Kraft No. 2	1.60	@	1.70

(F.o.b. Pulp Mill)

Kraft Domestic	1.60	@	2.75
(Delivered)			
Soda Bleached	2.50	@	—

*Add 60 Cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.00
Silesias No. 1	4.25	@	4.50
New Unbleached	6.75	@	7.25
New Soft Blacks	3.00	@	3.25
Blue Overall	4.00	@	4.25
Fancy	2.50	@	2.75
Washables	1.75	@	2.00
Mixed Khaki Cuttings	3.00	@	3.25
O. D. Khaki Cuttings	3.75	@	4.00
Men's Corduroy	1.50	@	1.75
New Mixed Blacks	2.50	@	2.75

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	@	3.25
White, No. 2—			
Repacked	1.75	@	2.25
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.50	@	1.75
Miscellaneous	1.25	@	1.50
Black Stockings	2.50	@	3.00
Roofing Rags—			
No. 1	1.15	@	1.30
No. 2	.85	@	.90
No. 3	.75	@	.80
No. 4	.70	@	.75
No. 5A	.65	@	.70

Foreign Rags

New Rags

New Dark Cuttings	1.60	@	1.70
New Mixed Cuttings	1.75	@	1.85
New Light Silesias	3.75	@	4.00
Light Flannelettes	3.75	@	4.00
Unbleached Cuttings	6.50	@	6.75
New White Cuttings	6.50	@	6.75
New Light Oxfords	3.25	@	3.50
New Light Prints	2.75	@	3.00

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.75
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.90	@	2.15
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	1.75	@	1.85
French Blue Linens	2.30	@	2.40
German Blue Linens	2.15	@	2.25
German Blue Cottons	1.70	@	1.80
Checks and Blues	1.30	@	1.40
Linsey Garments	1.50	@	1.75
Dark Cottons	1.15	@	1.30
Old Shopperies	1.00	@	1.10
New Shopperies	.90	@	1.00
French Blues	1.70	@	1.80

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.50	@	1.60
Domestic	1.40	@	1.50
Wool Tares, light	1.20	@	1.30
Wool Tares, heavy	1.25	@	1.35
Bright Bagging	1.20	@	1.30
Manila Rope—			
Foreign	2.40	@	2.50
Domestic	2.50	@	2.75
Small Mixed Rope	1.10	@	1.35
New Burlap Cut	2.00	@	2.25
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.70	@	2.80
Ordinary Hard White No. 1	2.35	@	2.45
Hard White No. 2	2.10	@	2.20
Soft White No. 1	1.95	@	2.05
Flat Stock—			
Stitchless	.90	@	1.00
Over issue Mag	.90	@	1.00
Solid Flat Book	.80	@	.90
Crumpled No. 1	.65	@	.75
Solid Book Ledger	1.50	@	1.65
Ledger Stock	1.05	@	1.15
New B. B. Chips	.30	@	.35
Manilas—			
New Env. Cut	1.70	@	1.80
New Cuttings	1.35	@	1.45
Print	Nominal		
Bogus Wrapper	.40	@	.50
Container	Nominal		
Old Kraft Machine—			
Compressed bales	1.15	@	1.25
News—			
No. 1 White News	1.20	@	1.25
Strictly Overissue	.70	@	1.25
Strictly Folded	.40	@	.50
No. 1 Mixed Paper	.25	@	.30

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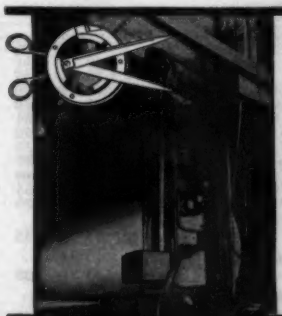

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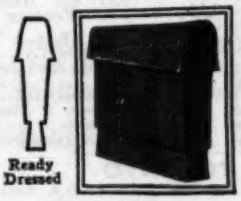

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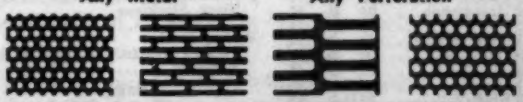

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Twines
(F. o. b. Mill)

Cotton—			
B. C. 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16½
No. 2	.15	@	.16
Tube Rope—			
4-ply and larger	.09¼	@	.09¾
Fine Tube Rope—			
4-ply	.11¼	@	.11¾
3-ply	.14¼	@	.14¾
2-ply	.14¼	@	.14¾
Paper Makers Twine	.08¼	@	.13¼
Box Twine, 2-3 ply	.14¼	@	.14¾
White Hemp	.13¼	@	.16¾
Java Sisal—			
No. 1 Basis	.11½	@	—
No. 2 Basis	.10½	@	—
New Zealand Sisal	.11½	@	—
Sisal Lath Yarn—			
No. 1	.13½	@	.15½
No. 2	.11½	@	.13½
Manila Twine	.24½	@	.29½

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.12	@	.50
Water Marked Sulphite Bond	.06½	@	.15
Sulphite Bond	.05½	@	.15
Superfine Writing	.18	@	.3-
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¼	@	.07¼
No. 2 S.&S.C. Book	.05¼	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04½	@	.05-
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04½	@	.04¾
Butcher's Manila	.03¾	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Tag Boards	.04¼	@	.06½
Sulphite Screenings	.03	@	.03¾
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	41.00	@	—
Sheets, open	46.00	@	51.00
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent coated	65.00	@	—
Container Lined—			
85 Test, per 1000 sq. ft.			1.70
100 Test, per 1000 sq. ft.			1.85

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.70	@	2.00
No. 1 Hard White	1.40	@	1.65
No. 1 Soft White	1.25	@	1.50
Ledger & Writings	.70	@	.80
Solid Books	.60	@	.70
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.50	@	.55
Overissue News	.60	@	.70
Old Newspapers—			
No. 1	.50	@	.55
Mixed Papers—			
No. 1	.30	@	.35
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.04	@	.40
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07¾
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.10
Manila Sul., No. 1	.03	@	.06
Manila No. 2	.03	@	.05
No. 1 Kraft	.05¼	@	.06½
No. 2 Kraft	.03¾	@	.05
Southern Kraft	2.75	@	4.00
Common Bogus	.03	@	.04½
(Delivered Philadelphia)			
News Print Rolls	46.00	@	55.00
Straw Board	40.00	@	45.00
News Board	50.00	@	—
Chip Board	45.00	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	32.25	@	34.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.03½	@	.04
New White, No. 2	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01¼	@	.02
Blue Overall	.03½	@	.04
Cottons—According to grades—			
Washable, No. 2	.02½	@	.03
New Blue	.01½	@	.03
Fancy	.01½	@	.03
New Black Soft	.02	@	.04
New Light Seconds	.01¾	@	.02
New Dark Seconds	1.50	@	1.75
Khaki Cuttings—			
No. 1 O.D.	.03	@	.04
No. 2 Mixed	.03	@	.04
Corduroy	.02	@	.03
New Canvas	.03½	@	.04½
New Black Mixed	.02½	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.50
Miscellaneous	1.75	@	2.25
M. G.	3.00	@	3.75
Thirds and Blues—			
Miscellaneous	1.00	@	1.50
Repacked	1.50	@	2.00
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.85

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	1.75
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.25	@	2.30
No. 2 Hard White	2.00	@	2.10
No. 1 Soft White	2.05	@	2.10
No. 2 Soft White	1.50	@	1.60
No. 1 Mixed	.95	@	1.00
No. 2 Mixed	.75	@	.80
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.25	@	1.50
No. 1 Books, heavy	.90	@	1.00
No. 2 Books, light	.70	@	.80
No. 1 New Manila	1.20	@	1.50
No. 1 Old Manila	.85	@	.90
Print Manila	.75	@	.80
Container Manila	.65	@	.70
Old Kraft	1.00	@	1.10
Common Paper	.35	@	.40
No. 1 Mixed Paper	.40	@	.45
Straw Board Chip	.40	@	.45
Binders Board Chip	.40	@	.45
Corrugated Board	.60	@	.70
Overissue News	.60	@	.65
Old Newspapers	.40	@	.50

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05½	@	.11
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06¾
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¾	@	.05
No. 2 Kraft	.03½	@	.04¾
(F. o. b. Boston)			
Southern Kraft	.03½	@	.04¾
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)			
Common Bogus	.02	@	.02¾
(Delivered New England points)			
News Print, rolls	44.50	@	—
Straw Board, rolls.009	—	@	35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	45.00	@	50.00
Chip Board	42.50	@	47.00
Chip Board (Creasing)	45.00	@	—
Single Manila Lined Chip	52.50	@	62.50
Single White, Patent Coated News Board—			
Bender	62.50	@	72.50
Wood Pulp Board	70.00	@	75.00
Binder Boards	62.00	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.40	@	—
No. 1 Soft White	1.75	@	2.00
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.40	@	1.50
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	1.00	@	1.10
No. 1 Books, heavy	.85	@	.95
No. 1 Books, light	.65	@	.75
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.25	@	1.30
No. 1 Old Manila	.95	@	1.05
White Blank News	1.05	@	1.10
No. 1 Kraft	1.10	@	1.15
Manila	.75	@	.80
No. 1 Mixed Papers	.20	@	.25
Print Manila	.40	@	.45
Overissue News	.55	@	.60
Old Newspapers	.35	@	.40
Box Board Chips	.32½	@	.35
Corrugated Boxes	.35	@	.40
Screening Wrappers	.60	@	.70

Bagging
(F. o. b. Boston)

Manila Rope—			
Foreign	—	@	2.25
Domestic	—	@	2.50
Transmission Rope	1.60	@	—
Mixed Strings	—	@	.60
Jute Rope	1.35	@	—
Jute Carpet Threads	.65	@	.70
Gunny No. 1—			
Foreign	1.50	@	—
Domestic	1.20	@	1.30
Bleachery Burlap	3.00	@	3.25
Scrap Burlap	1.15	@	—
Scrap Sisal	1.10	@	1.20
Scrap Sisal for shredding	1.25	@	1.35
Wool Tares, heavy	—	@	1.25
New Burlap Cuttings	1.35	@	1.60
Australian Wool Pouches	2.25	@	2.50
Heavy Baling Bagging	1.40	@	1.50
Paper Mill Bagging	.90	@	1.10
Bagging No. 2	.40	@	.50

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.02	@	.02¼
New White No. 1	.06½	@	—
New White No. 2	.04½	@	.05
Silesias No. 1	.04	@	—
New Black Silesias	.02½	@	.03
New Unbleached	.07	@	.07¼
Blue Cheviot	—	@	4.65
Fancy	—	@	.02½
Washable	.02¼	@	—
Cottons—According to grades—			
Blue Overalls	—	@	.03¾
New Black, soft	.04	@	.04½
Khaki Cuttings	.03	@	.03¼
O. D. Khaki	.03	@	.03¼
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	—	@	.06¼

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.00	@	2.25
White No. 2—			
Repacked	2.00	@	2.25
Miscellaneous	2.00	@	2.75
Twos and Blues	1.25	@	1.50
Thirds and Blues			
Repacked	1.10	@	1.25
Miscellaneous	.85	@	.90
Black Stockings	2.25	@	2.50
Roofing Stock			
No. 1	1.20	@	1.25
No. 2	.80	@	—
No. 3	.65	@	.70

Foreign Rags
(F. o. b. Boston)

Dark Cottons	1.00	@	1.10
New White Shirt Cuttings	5.50	@	6.00
Dutch Blues	2.00	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.55	@	1.60
Old Linsey Garments	1.40	@	1.50

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.10¼	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.10¼	@	—
No. 2 Colored	.09	@	.10
Ledgers (sulphite)			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.20	@	—
No. 3 M. F. (Carloads)	5.70	@	—
No. 4 M. F. (carloads)	4.75	@	—
No. 1 S. C. (carloads)	6.65	@	—
No. 3 S. C. (carloads)	6.20	@	—
No. 4 S. C. (carloads)	5.20	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.25	@	—
White Wrap	2.22½	@	—
"D" Manila	4.75	@	—
No. 1 Manila	5.25	@	—
Fiber	5.25	@	—
Kraft, M. F.	5.75	@	—
Kraft No. 2	5.35	@	—

(F.O.B. Cars Toronto)

News, per ton—			
Rolls (contract)	45.50	@	—
Sheets	50.50	@	—

Pulp
(F. o. b. Mill)

Ground Wood	18.00	@	20.00
Sulphite easy bleaching	40.00	@	—
Sulphite, news grade	38.00	@	—
Sulphite, bleached	50.00	@	55.00
Sulphate	50.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.10
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.50
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.50
Printed Manilas	.70	@	—
Kraft	1.25	@	1.50
News and Scrap—			
Strictly Overissue	1.00	@	—
Strictly Folded	.70	@	—
No. 1 Mixed Paper	.60	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.05¼	@	.05½
Fancy Shirt Cuttings	.02¼	@	.02½

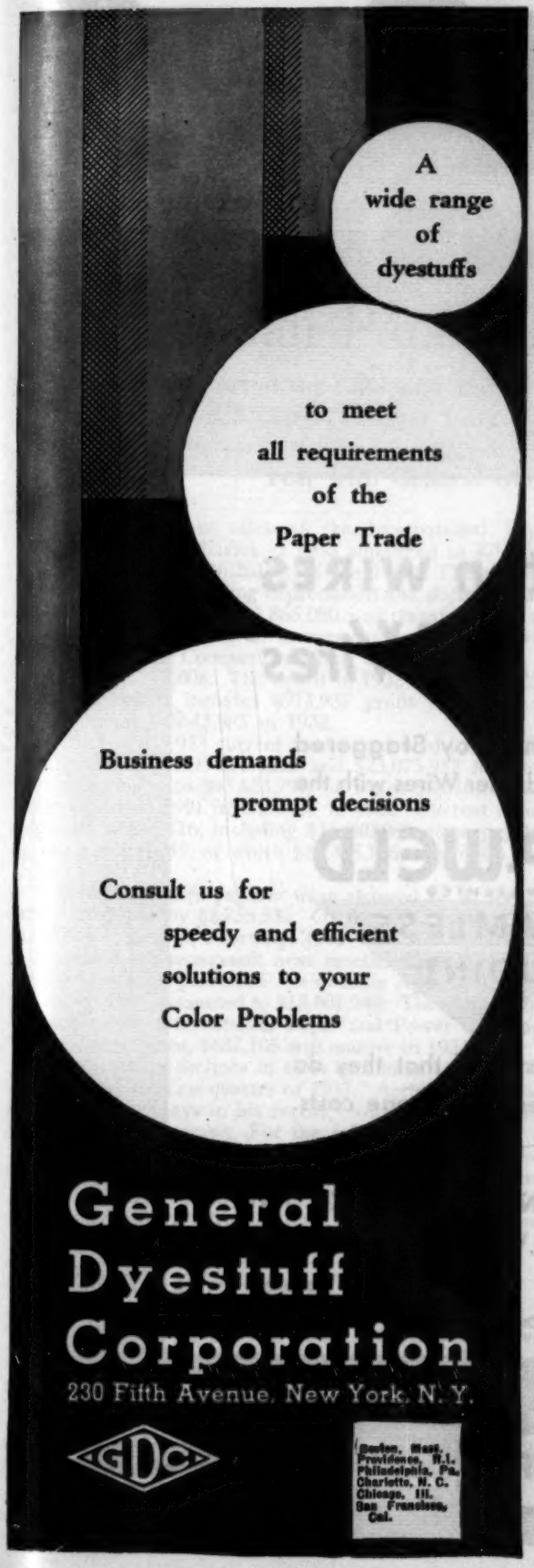
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TABLE OF CONTENTS

International Increases Gross Sales 11
Racquette River Makes Improvements 11
Cancel Newsprint Hearing 11
Wisconsin Mills Make Improvements 12
TAPPI Holds Paper Machine Symposium 12
Peru Raises Duty on Paper Bags 12
Boston Market Continues Fairly Active 13
Chicago Market Shows Irregular Trend 14
Price Bros. Plans Deadlocked 15
St. Lawrence Paper Mills Report 15
Fort Wayne Waste Dealers Organize 15
Philadelphia Market More Buoyant 16
Pacific TAPPI Meets at Seattle 17
German Technical Men Reorganize 18
The Principle of the Open-Minimum Price 20
High Water Handicaps Holyoke 20
Construction News 24
Hear Tax Abatement Cases 25
30 Paper Plants Have Perfect Score 25
Editorial 26
Program for Superintendents' Meeting 27
J. G. Kline Leaves Miamisburg Paper Co. 27
Pulp Imports at High Level in Japan 27

Technical Section

Pulp and Paper Literature Review 29
Standardization in the Paper Industry 31
Paper Standards and the Importer 32
Work of the Writing Paper Association Grading Committee 33
Specifications and the Paper Manufacturer 34
The Paper Grading Problem of the Book Paper Industry 35
Paper Standards from the Viewpoint of the Institute of Paper Chemistry 36
Development and Use of Quality Standards ... 38
Paper Operating Developments in 1933 39
Standardization from Consumer's Viewpoint ... 41

Imports of Paper and Paper Stock 43
New York Market Review 46
Miscellaneous Markets 48
Market Quotations 50

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